The role of informal second language learning in the spoken use of discourse markers by Greek adolescent learners of English

Thesis

The role of informal second language learning in the spoken use of discourse markers by Greek adolescent learners of English

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Declaration of authorship

I declare that this thesis has been composed solely by myself and that it has not been submitted, either in whole or in part, in any previous application for a degree. Except where otherwise acknowledged, the work presented is entirely my own.

Christina Lyrigkou

Abstract

The employment of discourse markers (DMs), such as *well, so, you know, I mean*, is considered an integral part of spoken discourse. Among their various functions in discourse, DMs are used to manage the conversation by creating coherence and establishing social rapport between speaker and hearer. However, little is known regarding the ways in which the DM use of learners of English as a foreign language (EFL) is shaped by individual and contextual factors over time in the EFL context. Although research has looked into the factors of proficiency and formal instruction, the role of informal second language learning (ISLL) and learner motivation, have not been sufficiently addressed. Situated within the Complex Dynamic Systems Theory, this thesis reports on the findings of a longitudinal study which tracked the spoken DM use of 52 Greek adolescent learners of English at four time-points over five months. Speaking activities, lesson recordings, questionnaires and semi-structured interviews were employed iteratively to gain insight into the interaction of various individual and contextual factors with learner spoken DM use as well as exploring learner variation over time. Statistical analysis (Generalized Linear Mixed-effects Modelling) and thematic qualitative text analysis, employed both at group and individual level, revealed the determining role of leisure-oriented ISLL in broad and frequent use of markers signalling textual, interpersonal, and textual-interpersonal functions. This study makes important contributions to the fields of ISLL and interlanguage pragmatics which can inform future learner and teacher practices and help critically evaluate the current role of formal education on EFL learners' DM use.

To the memory of my grandmother Christina. My beloved nona.

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List of Key Abbreviations

AICC:	Akaike Information Criterion Corrected
ANCOVA:	Analysis of Covariance
ANOVA:	Analysis of Variance
CDST:	Complex Dynamic Systems Theory
CEFR:	Common European Framework of Reference for languages
DM:	Discourse Marker
EE:	Extramural English
EFL:	English as a Foreign Language
EMI:	English as a Medium of Instruction
ESL:	English as a Second Language
GLMM:	Generalized Linear Mixed-effects Model
ICC:	Intraclass Correlation Coefficient
IDLE:	Informal Digital Learning of English
IELTS:	International English Language Testing System
IMLL:	Informal Mobile Language Learning
L2MSS:	L2 Motivational Self System
LINDSEI:	Louvain International Database of Spoken English Interlanguage
MALL:	Mobile Assisted Language Learning
MALU:	Mobile Assisted Language Use
NS:	Native Speaker
OILE:	Online Informal Learning of English
PM:	Pragmatic Marker
RQ:	Research Question
SDT:	Self-Determination Theory
SLA:	Second Language Acquisition
SPSS:	Statistical Package for the Social Sciences
STATA:	software for STAtistics and daTA sciences

Chapter 1. Introduction

For adolescent speakers of Greek as a first language (L1) in Greece, English is primarily learned in formal educational settings (Rothoni & Mitsikopoulou, 2019). Around 90% of secondary state school students attend private English classes in addition to the language tuition they receive at their schools, given that the former are believed to offer more rigorous exam preparation for the attainment of language certificates (Birbili & Papaoikonomou, 2019). As a result, for many learners, daily communication with English speakers in natural, i.e. non-instructional, contexts, is not the norm, while attending English classes is associated to a large extent with the attainment of a language certificate rather than acquiring the language (Angouri et al., 2010; Birbili & Papaoikonomou, 2019). However, being able to communicate successfully in English is considered vital, particularly for future purposes (Kantaridou & Xekalou, 2021). This is not only because Greek is a lesser spoken language globally, but also due to the increasingly high status of English in the Greek job market, especially taking into consideration Greece's economic dependence on the tourism industry (Angouri et al., 2010). CEFR[1] C level proficiency is viewed by Greek employers as fundamental (Kantaridou et al., 2018) and therefore, the incentive to use and speak English is not restricted to those who wish to work or study internationally.

Despite the significance ascribed to successful spoken English communication, Greek learners of English might struggle to learn to speak natural English and communicate because of the restrictions of formal educational settings. Firstly, due to the exam- and certificate-centredness of English as a Foreign Language (EFL) education in Greece (Mitsikopoulou et al., 2017), the focus is on teaching to the test rather than on how to use the language communicatively in real-life settings (Sifakis, 2018). Furthermore, it has been posited that learning and speaking a second language (L2) outside the physical space of the target language community can be challenging (Muñoz, 2008; Saito & Hanzawa, 2018; Martín Laguna, 2019). For example, opportunities for exposure to authentic language and interaction with other speakers on a daily basis are perceived to be more limited when the L2 is primarily learned in formal instructional contexts, compared to living in the target country (Taguchi, 2015a). As a result, development of language for successful spoken communication, which is otherwise encouraged through interaction in L2 sociocultural,

[1] Language proficiency levels of the Common European Framework of Reference (CEFR, Council of Europe, 2018): A1 and A2 (basic users), B1 and B2 (independent users), C1 and C2 (proficient users).

naturalistic contexts, can be considered slow or hindered when the sole context of L2 exposure and use is the formal classroom (Taguchi, 2015a; Gilquin, 2016).

Using discourse markers (DMs) (e.g. *you know*, *well*, *anyway*, *I mean*) is associated with successful spoken communication (Crystal, 1988; Blakemore, 2002). The study of DMs in the spoken discourse of language learners belongs to the broader field of L2 pragmatics. The field of L2 pragmatics addresses the "[l]earning [of] sociocultural conventions and norms of language use—what to say or not to say in a certain situation, how to convey intentions in a contextually fitting manner, and how to achieve a communicative goal collaboratively with others" (Taguchi, 2019:1). Being pragmatically competent in the L2 is an indispensable part of successful communication and social interaction, and entails being able to comprehend and produce pragmatic norms and sociocultural conventions in the L2 (e.g. ways of apologising, making a request, projecting politeness) during interaction with others in order to achieve communication goals (González-Lloret, 2019; Taguchi, 2019). The three key constituents of pragmatic competence are comprehension, production (or performance) and interaction (Culpeper et al., 2018). The pragmatically competent L2 learner is able to use linguistic resources, i.e. pragmalinguistic features, in order to realise those pragmatic norms during interaction (Taguchi, 2019). A growing area of interest in L2 pragmatics is pragmatic development; that is, the way pragmatic competence develops over time (Bardovi-Harlig, 2013; Taguchi, 2019).

Being pragmatically competent is critical. It is believed that lack of comprehension and production of pragmatic norms can have detrimental effects as it can lead to cross-cultural miscommunication (Cohen, 2013) and cultural stereotyping (Taguchi & Sykes, 2013); the speaker might come across as rude, overly critical or insulting (Svartvik, 1980; Limberg, 2016), which can in turn threaten human relationships (Taguchi & Sykes, 2013). This study focuses on DM use, which constitutes evidence of a speaker's pragmatic competence (House, 2013; Crible & Pascual, 2019). As will be further discussed in subsequent chapters, a pragmatically competent L2 speaker employs DMs in order to structure their discourse as well as involve the hearer in the construction of the message (Aijmer, 2002; House, 2013), ensuring spontaneous communication flows smoothly and efficiently (Crystal, 1988) and preventing misunderstandings (Romero-Trillo, 2020).

The optimal context for studying L2 pragmatic development has been considered the target language community, where the learner is exposed to and uses pragmatic norms during interactions with speakers of the target language (Taguchi, 2019). At the same time,

scholars have highlighted the limitations of the language classroom for fostering L2 pragmatic competence due to insufficient amount of pragmatic input and opportunities for L2 use (Taguchi, 2018; Romero-Trillo, 2020). However, thanks to technological advances which have enabled access to the L2 and L2 speakers on an anytime-anywhere basis (Kukulska-Hulme, 2020), it can be hypothesised that the individual need not be inside the physical space of the target language community in order to benefit pragmalinguistically, nor be limited to L2 exposure and use inside the language classroom. Learner-initiated, informal L2 engagement outside formal instructional settings and beyond the teacher-driven tradition, such as through the internet and digital media, has been the focus of research that has recently re-emerged in the field of second language acquisition (Sundqvist & Sylven, 2016; Dressman, 2020; Sockett & Toffoli, 2020). The study of the effect of informal, out-of-class L2 engagement on spoken DM use is among the aims of this thesis. Besides the presence of contextual influences, it is believed that individual characteristics, such as learner motivation, also influence pragmatic learning and "mediate development" (Taguchi, 2015a:5; see also Takahashi, 2019), and can affect learners' L2 engagement both in formal and informal settings (Henry & Cliffordson, 2017).

Observations from the researcher's personal experience as an EFL teacher in Greece, the UK and online brought to her attention that not all students who attended the same class and had equally high spoken performance employed DMs in their speech. Informal conversations with students further revealed that learners' motivations and self-initiated engagement with English in their free time outside the class varied. The findings of the researcher's previous study as part of a master's degree (Lyrigkou, 2016) also suggested a link between DM use and out-of-class engagement with English. The study examined the spoken performance of 76 Greek EFL learners between the ages of 13 and 16. Among the findings was that high achievement in a speaking test correlated positively with learners' self-initiated exposure to the language outside the class in their free time (e.g. watching TV, using smartphone applications). In-depth analysis of three participants' speech samples revealed that although the students had achieved the same high grade on the speaking test, they differed in the way they used language and in their out-of-class engagement with English in their free time. Two of the students, who reportedly engaged in various out-of-class activities in English daily (e.g. watched short videos on YouTube and played video games), made use of DMs and other spoken language conventions, such as colloquial language (e.g. *guy* instead of *man*) and shortened forms (e.g. *isn't* instead of *is not*). Meanwhile, the discourse of the third student, who engaged the least with English outside the class in his free time, lacked spoken language conventions such as DMs.

Previous research and personal observations hence took the researcher to the literature, leading her to pursue the examination of factors that influence learners' spoken DM use with a particular focus on their out-of-class engagement with English as well as their motivation to learn and speak English.

The overall aim of this research is to investigate the use of DMs in the spoken productions of EFL learners in Greece and identify factors that support (or hinder) learner DM use in spoken discourse. Understanding the influence of contextual and individual factors on learner DM use and development will help identify the optimal conditions that may encourage the acquisition of DMs, which can be problematic for learners, as will be discussed in Chapter 3, Section 3.2.1. It has been posited that learners of English in their home country, like Greek EFL learners in the present context, might be at disadvantage because of limited opportunities for exposure to DM input and use of DMs compared to learners inside an English-speaking country (Gilquin, 2016). Furthermore, the EFL classroom has been regarded a non-natural context in terms of real-life interaction and therefore DM use is constrained (Romero-Trillo, 2020). This can be particularly the case in the Greek, exam-oriented EFL classroom. However, a factor yet to be examined with regard to spoken DM use is learners' engagement with the language outside the class, or, as this study terms it, their Informal Second Language Learning (ISLL).

The outline of the thesis is as follows. After situating the study in the theoretical frameworks of usage-based theories and complex dynamic systems theories that bring together the examination of contextual and individual influences in learner development (Chapter 2), a review is presented of previous literature regarding the use of DMs by learners of English and factors that have been or could be related to learners' spoken DM use (Chapter 3). After gaps in the literature are identified and research questions (RQs) are formulated, the thesis describes the methodology selected to address the RQs (Chapter 4). This study focuses on learners' frequency and range of DM use in spoken discourse (i.e. type and number of DMs employed), their development over time and the effect of different factors on DM use. The methodology chapter involves a presentation of the longitudinal study design, the recruitment of L1 Greek participants, the data collection instruments, the processing of data pertaining to learners' DM use and the different factors under examination, among other methodological issues. The results of the statistical and qualitative analysis are subsequently presented (Chapter 5). After outlining the results of the measurement of learners' DM frequency, DM range, and their development over time, the chapter presents the results of analysis that revealed the effect of the factors of formal

instruction, spoken proficiency, ISLL and motivation on those aspects of spoken DM use at group and individual level.

Findings are then discussed and interpreted in relation to previous literature (Chapter 6) and the discussion of results then leads to a presentation of the study's contributions. Given that the researcher's preliminary observations have suggested the influence of out-of-class L2 engagement, it is of interest to take those cues and establish the role of ISLL in DM use alongside other factors. This can contribute to the field of L2 pragmatics and DM use, which has mainly focused on what happens inside the target language community or the teacher driven tradition, and has left underexplored the learner-initiated, out-of-class L2 engagement and its important potential to encourage pragmatic competence. Learners in the EFL context might not be at such disadvantage as has previously been argued if that factor is also taken into consideration. Finally, implications for educational policy, pedagogy and practice are presented, while acknowledging the study's limitations, concluding with suggestions for future research (Chapter 7).

Chapter 2. Theoretical background

The study of DM use within pragmatic L2 learning, as well as the factors affecting it, can be approached through usage-based theories of language learning (Lieven & Tomasello, 2008; Ellis, 2019) and the Complex Dynamic Systems Theory (CDST, de Bot, 2017). A usage-based approach is relevant because, firstly, DMs are frequent in spontaneous oral discourse and social interaction (Haselow, 2017); usage-based theorists have underscored the role of frequency of constructions in the input in language acquisition (Ellis, 2019). Secondly, usage-based theories highlight the importance of repeated exposure to input and meaningful language use in language acquisition (Tomasello, 2009); out-of-class L2 engagement can provide more opportunities for exposure to and use of the language (and possibly DMs) through meaningful experience in addition to in-class input exposure and L2 use. At the same time, CDST is useful because this study aims to identify factors supporting or hindering DM use; CDST is concerned with the interplay of different factors and their influence in the learning trajectory (de Bot & Larsen-Freeman, 2011). This chapter situates the study of learner DM use in these theoretical frameworks, explains how the theories informed the study's setup and further justifies why both frameworks are needed.

2.1 Usage-based theories of language learning

As the term suggests, usage-based theories view language use as a prerequisite for L1 and L2 acquisition (Ibbotson & Tomasello, 2016; Ellis, 2019). Originally developed to explain L1 acquisition, usage-based theories posit that individuals acquire their first language through "usage events", which constitute utterances in certain communication contexts (Lieven & Tomasello, 2008:168). Utterances contain various constructions (e.g. morphemes, words). Children engage in a process of abstraction (or generalisation): they are exposed to various constructions through input in their language-rich environment and with the help of pattern-finding skills they accumulate "abstract linguistic representations" (Lieven & Tomasello, 2008:168). During L1 acquisition, patterns are discerned gradually through input exposure, and language develops through the addition of more and more constructions to the child's construction inventory. The more frequent the input exposure and the presence of these constructions in the input, the more frequently the abstraction process takes place and the more entrenched these constructions become in the child's

inventory, i.e. the more increasingly available the constructions are for processing and producing utterances (Lieven & Tomasello, 2008). As becomes evident, input and frequency are underscored in usage-based theories (Bybee, 2008).

Turning to second language acquisition (henceforth SLA), Ellis's (2006) associative-cognitive theoretical framework of SLA draws on usage-based theories of L1 acquisition. According to Ellis (2006), SLA is Construction based, Rational, Exemplar driven, Emergent and Dialectic; hence, the framework is termed CREED. By being exposed to L2 input, learners encounter constructions, i.e. form-meaning mappings, such as discourse markers. The frequency, recency, and salience[2] of constructions in the input determines the extent to which the brain will process them and extract probabilistic patterns so that it can predict the next time the construction is likely to occur. This optimises the learner's comprehension and production. Learning is therefore rational as learners "figure language out" (Ellis, 2006:103). Learning is also exemplar-driven because based on the existence of predominant exemplars in the input, learners extract regularities of rules or word combinations. For example, the predominant plural *-s* form (e.g. *dog-dogs*) will be generated first by learners who will then generate the irregular forms (e.g. *foot-feet*). Learning is emergent: use of and exposure to the language determine the extent to which these regularities emerge. Finally, learners are scaffolded through social interaction to realise the gap between current and correct language processing and use; hence, learning is dialectic. Usage-based theories in SLA underscore the role of frequency of constructions in the input as well as repeated exposure and meaningful language usage (Ellis, Romer & O'Donnell, 2016; Vespoor, 2017; Eskildsen & Kasper, 2019).

Discourse markers have been found to be frequent constructions in oral discourse, as their use fulfils multiple functions, from discourse management to ensuring communication flows smoothly (Fung & Carter, 2007; D'Arcy, 2017). Research has shown that in certain contexts (e.g. language classroom), certain DMs (e.g. *well, so*) are more frequent than others (e.g. *like, you know*) (Müller, 2005; Hellerman & Vergun, 2007). Usage-based theorists have argued that given sufficient exposure, frequently occurring constructions will be acquired sooner and more easily than constructions that are less frequent (Wulff & Ellis, 2018). The individual's experience with the input is hence of great importance (Ortega, 2015). Schmidt's Noticing Hypothesis (1990; 2010) concerns learners' experience with L2 input. More specifically, the Noticing Hypothesis posits that attention (i.e.

[2] i.e. how noticeable the construction is to the learner

allowing working memory to attend to a linguistic feature) is necessary in order to convert input to intake and lead to learning. In L2 pragmatics, the learner must attend to linguistic aspects as well as their pragmatic function and the wider context of use (Schmidt, 2010). Noticing is an important pre-requisite, but not a sufficient condition for L2 pragmatic acquisition unless it is followed by subsequent processing of input (Kasper & Rose, 2002) in the form of accessing and selecting pragmatic knowledge in order to incorporate it in one's own productions (Li, 2019). Although, as discussed, usage-based theories are useful for researching DM use, a limitation must be acknowledged, as the theories have underplayed the role of affective factors (e.g. motivation). Learner motivation could influence the degree to which learners interact with DMs in the input and take advantage of opportunities to notice and process them (Ushioda, 2016).

Drawing on usage-based theories and the Noticing Hypothesis, it can be concluded that the following are crucial for driving DM acquisition: frequent exposure to input where DMs are frequent, combined with noticing these features in the input and subsequently processing them through active use. Therefore, it is necessary to understand the extent to which EFL learners have opportunities for exposure to input and use of language that contains DMs. Addressing the limitation of usage-based frameworks, it is also important to understand the role of affective factors such as learner motivation on DM use. The usage-based framework guided the study's methodology; to explore possible sources of DM input and use, data were collected both from language input inside the classroom as well as learners' self-reported exposure to, processing of and use of language outside the class (Chapter 4).

2.2 Complex Dynamic Systems Theory

The term Complex Dynamic Systems Theory (henceforth CDST) was coined by de Bot (2017) in order to bring together the study of Complexity Theory and Dynamic Systems Theory in SLA. CDST offers a conceptual framework to describe the way systems behave and change (de Bot, 2017). De Bot and Larsen-Freeman (2011:8) refer to complex dynamic "systems" as "groups of entities or parts that work together as a whole". A complex dynamic system consists of variables that are interconnected and are in constant interaction with each other (Vespoor & Behrens, 2011). Given that Complexity Theory and Dynamic Systems Theory originated in the physical sciences, such as chemistry, biology and meteorology (Larsen-Freeman, 2017), a "system" has referred to, for example, a living

cell, a bird flock, or the climate (de Bot, 2017). In SLA, a system has referred to a language (Vespoor & Behrens, 2011), a classroom (Hiver & Al-Hoorie, 2020) or a learner's L2 development, such as their pragmatic development (e.g. their production of speech acts of requests and opinions in Taguchi, 2012).

Scholars have emphasised the relevance of situating L2 pragmatics research in the CDST framework (Taguchi & Roever, 2017; Culpeper et al., 2018). However, its application has so far been limited given that L2 pragmatics studies have not been CDST theory-driven but rather CDST has appeared as a post-hoc interpretation of findings (Takahashi, 2019). This could be because the empirical application of the theory involves procedures which "are not well known and have not had their own limitations tested" in SLA (MacIntyre et al., 2017:117). This points to the main limitation of using this theory. Despite recent endeavours to introduce CDST research methods in SLA (e.g. Hiver & Al-Hoorie, 2020; Sampson & Pinner, 2021), current knowledge is based on limited empirical evidence as most studies, particularly in L2 pragmatics, have utilised non-CDST methodologies. As a result, it is not entirely clear how the different tenets of the theory (discussed in this section) are applied. However, language development has been shown to be dynamic and subject to change, and CDST is the most suitable framework to describe and explain it for the following reasons (Lowie, 2017). Through a CDST approach, the researcher can firstly describe the development of pragmatic features, such as DMs, by tracking it over time. Secondly, a study based on CDST can explain different stages in development by examining contextual and individual factors and the way they influence a learning trajectory (Taguchi, 2012) and, in this study, DM use. This can in turn help understand the nature of pragmatic development as well as the constraints or benefits of the context and individual characteristics (Takahashi, 2019), which are aims of this study. What follows is a presentation of some of the basic characteristics of CDST according to CDST theorists in SLA (de Bot & Larsen Freeman, 2011; Hiver & Al-Hoorie, 2016). Links will be made to L2 pragmatics given the relevance of this framework to study pragmatic development.

(1) Dependence on initial conditions

A complex dynamic system, such as a learner's L2 pragmatic development, is dependent on its initial conditions. Initial conditions are the state the system is in at the outset of its examination by the researcher (Vespoor, 2015). This means that even small differences in the initial conditions across individuals (e.g. different interests, different previous language learning experiences) can lead to great differences across individuals later on in terms of

system behaviour (de Bot & Larsen-Freeman, 2011). For instance, given two individuals who belong to the same classroom, minimal differences across the individuals in the way they attend to pragmatic features in their teacher's input might lead to massive differences in their pragmatic competence over time.

(2) Interconnectedness

All parts of a complex dynamic system are interconnected. For example, looking at the L2 learner as a complex dynamic system, changes in one variable of the system (e.g. learner motivation) will influence changes in other variables (e.g. learner proficiency) (de Bot & Larsen-Freeman, 2011). This means that there is no simple cause-effect relationship and variability is not explained by one single factor (de Bot & Larsen-Freeman, 2011). For example, pragmatic change can be explained by the joint influence of factors such as affect, input, interaction, feedback, and proficiency among others (Taguchi, 2012).

(3) Non-linearity

Related to the system's interconnectedness is its non-linearity. Because variables are interconnected, it is not easy to predict the direction of change (i.e. development) (de Bot, Lowie & Vespoor, 2007). Development is believed to be non-linear, consisting of backslidings, jumps, fluctuation, or stagnation (Larsen-Freeman & Cameron, 2008). A change in one variable does not directly cause a change of the same proportion in another variable; in other words, change is not linear as there is often "no proportionate effect for a given cause" (de Bot & Larsen Freeman, 2011:12). For example, being twice as much exposed to pragmatic input does not necessarily lead to a two-fold increase in the learner's pragmatic competence or performance.

(4) Openness, context and control parameters

A complex dynamic system is open (Hiver, 2015). This means that it interacts with the context where it is situated and is subject to external and internal influences (de Bot & Larsen Freeman, 2011). For example, taking a learner's L2 pragmatic development as the complex dynamic system under examination, different contexts might have different impacts on the system. Learning the language in a context where there is increased exposure to L2 input (e.g. inside an L2 community) will influence L2 pragmatic development differently from learning the language in a context of limited exposure to the L2 (Taguchi, 2015). This can be due to external or contextual influences, such as opportunities to interact with L2 others, availability of L2 resources (e.g. TV, internet

access) or type of formal instruction (de Bot & Larsen Freeman, 2011). At the same time, there are internal or individual influences at play, such as learner motivation, their attitudes towards the L2 community or their memory capacity, among others (de Bot & Larsen Freeman, 2011). In CDST terminology, the external and internal influences on the system are known as the system's "control parameters" (Hiver & Al-Hoorie, 2016:750).

(5) Attractor states

An attractor state is a state in development in which the system settles, displaying relatively stable behaviour (Hiver, 2015). As Larsen-Freeman (2019) contends, although stable, the system is never in stasis, meaning that it is always under the influence of various internal and external factors (i.e. the control parameters) which cause the system to settle into that attractor state. Unless the influences of the control parameters are strong, the system will not move out of its attractor state and despite fluctuation, there will not be substantial change (Baba & Nitta, 2014). In cases of greater stability, the system is believed to have lodged into a deep attractor basin and the control parameters that cause this stability are considered powerful attractors (Hiver, 2015). An example of an attractor state is fossilisation (de Bot & Larsen-Freeman, 2011), such as a learner whose pragmatic development has stagnated and who shows little or no competent use of pragmalinguistic features despite being grammatically proficient in the language (Romero-Trillo, 2020). A possible powerful attractor that influences stability in the system might be the type of formal instruction, such as instruction that does not focus on the teaching of pragmatic features (Romero-Trillo, 2020). Given lack of progress, an attractor state might be considered as a negative state to be in, but not necessarily (MacIntyre et al., 2021). A powerful attractor, such as constant language exposure and practice, might be influencing the system to settle in an attractor state of high proficiency.

(6) Phase transitions

The system will leave its attractor state when a control parameter causes a highly influential change to the system (Baba & Nitta, 2014). The system therefore becomes unstable due to perturbation (Hiver, 2015). The result of strong perturbation is that the system eventually self-organises into a new attractor state, i.e. a new period of stability. If the system's new behaviour is "observably different" from its behaviour before (Henry, 2015:317), and the new attractor state does not resemble the previous one, it is understood that a phase transition or phase shift has occurred (Hiver & Al-Hoorie, 2020). For example, a critical change in the parameters of a system, such as a contextual factor (e.g. a trip

abroad) might trigger change in the learner's pragmatic development, moving the system away from a period of stagnation towards a "volatile state" (Irie & Ryan, 2015:357). If what emerges is a qualitative change in pragmatic development (e.g. increased use of pragmatic features in one's productions), then a phase transition has occurred (Takahashi, 2019:440). A phase transition might occur abruptly or gradually (Hiver & Al-Hoorie, 2016).

(7) Variability

There is intra-individual and inter-individual variability in development. Intra-individual variability means that a learner's development will differ over time (van Dijk, Vespoor & Lowie, 2011); their trajectory is likely to go through different stages (e.g. stability, jumps, backslidings), as already discussed. There is also inter-individual variability, meaning that although there can be general group trends and patterns of behaviour, no two learners will evolve in exactly the same way (Vespoor, 2015). The focus of CDST research is to explore the context-dependency of the system and the way the various internal and external factors interact and change, shaping the learner's development (van Dijk et al., 2011).

Drawing on the above CDST characteristics and given the interconnectedness of factors and their influence on a learning trajectory, it is important to identify the range of factors that can influence DM use and development as well as the direction of the influence, i.e. positive (supporting DM use) or negative (hindering DM use). Because of a system's context-dependency, the nature of the context of learning also needs to be examined to understand how it shapes DM use and development. CDST guided the study's methodology in terms of data collection and analysis (more details in Chapter 4).

CDST is in line with usage-based theories (Vespoor, 2017), as they both recognise the influence of the environment in language learning as well as what the learners themselves bring to the learning process (e.g. cognitive and psychological factors). The two theories complement each other in shedding light on adolescents' DM use. On the one hand, usage-based theories identify the different conditions which can drive DM acquisition (frequent input, meaningful use) and, on the other hand, CDST explains the processes involved in DM development (e.g. interaction of contextual and individual factors) as well as informs the appropriate methodology to study this phenomenon. The following chapter presents the literature review on learners' spoken DM use and the effect of different contextual and individual factors.

Chapter 3. Literature review

3.1 Introduction

The reality of EFL education in Greece as well as the researcher's observations from her previous research (Lyrigkou, 2016) and teaching experience led to a working hypothesis, which serves as a springboard for the study and which informs the review of literature presented in this chapter:

> Frequent and broad spoken use of DMs by EFL learners in oral activities over time would be more likely to be associated with learners' engagement with English in their free time outside the class and their motivation to learn and speak in English and less likely with other factors, such as their spoken proficiency and aspects of formal instruction attended.

When developing the working hypothesis and while drawing on the theory (Chapter 2), different domains of investigation were identified, into which the present chapter is divided. Firstly, the main area of enquiry is defined (Section 3.2); that is, the characteristics of DMs are presented and issues around their definition are discussed, followed by a review of cross-sectional and longitudinal research into the spoken use of DMs by language learners across learning contexts. The second part (Sections 3.3, 3.4, 3.5) is devoted to a review of studies into factors that have been or could be associated with learners' spoken DM use, starting with the main factor of interest, i.e. informal second language learning (ISLL), followed by studies into learner motivation and ending with a review of studies into other factors, including L2 proficiency and formal instruction.

By investigating previous work into learners' spoken DM use in different contexts and the effect of different individual and contextual factors, as informed by usage-based theories and CDST, the aims of this chapter are the following: (a) to situate the study in the existing literature, (b) to identify dominant views in the study of learner DM use, (c) to identify limitations of previous studies and gaps in the literature regarding the examination of learner DM use, and (d) to draw attention to the effect of ISLL, a factor which, as will be shown, has been given little, if any, consideration in L2 pragmatics and DM research, but which, as this thesis will argue, could be positively associated with frequent and broad use

of DMs by learners of English. The literature review concludes with a presentation of the research questions (RQs) of the study and the hypotheses for each RQ.

3.2 Discourse markers in spoken discourse

3.2.1 What are discourse markers?

The study of DMs in English spoken discourse arose in the 1970s and, since then, DMs have been defined in different ways (Schiffrin, 1987, Fraser, 1999; Crible, 2017b). Before evaluating the different definitions provided over the years and introducing the one that this study adopts, some of the most influential DM definitions are presented below.

Schiffrin (1987:31) defines DMs as "sequentially dependent elements which bracket units of talk". According to Carter and McCarthy (2006:208), DMs are "words and phrases which function to link segments of the discourse to one another in ways which reflect choices of monitoring, organisation and management exercised by the speaker". Other scholars define DMs as "linguistically encoded clues which signal the speaker's potential communicative intention" (Fraser, 1996:168) or "elements of language that have modified their original propositional meaning and have adopted a communicative status that weaves the net of discourse between the addressor, the addressee, and the context of a given message" (Romero-Trillo, 2012:4522). Some authors have not given a specific definition of DMs but have sought, instead, to describe their characteristics (e.g. Schourup, 1999; Aijmer, 2002; Müller, 2005).

Whereas some definitions encompass certain characteristics such as structural properties of DMs (e.g. "bracket units of talk", Schiffrin, 1987:31), others also refer to communicative properties (e.g. "signal the speaker's potential communicative intention", Fraser, 1999:168) or other inherent characteristics of DMs ("elements of language that have modified their original propositional meaning", Romero-Trillo, 2012:4522). Different words have been used to describe DMs, such as "elements", "linguistically encoded clues" and "words and phrases". In addition to the definitional fuzziness, another issue is the delimitation of DMs: there is lack of consensus regarding what elements constitute DMs (Stenström, 1994; Brinton, 1996; Carter & McCarthy, 2006). This is in part because the boundaries between "discourse markers" and "pragmatic markers" are not clear, while the two terms are often used interchangeably (Fedriani & Sanso, 2017). Unsurprisingly, DMs

have been characterised as "one of the most ambiguous pragmatic phenomena" (Polat, 2011:3746). Owing to these issues, what counts as a DM depends on the definition adopted by each study (Bolly et al., 2017), which complicates the review and evaluation of previous research.

Recently, Crible (2017a:58) provided a definition which brought together characteristics of DMs that have been agreed upon overall in the literature. The present study draws upon Crible's encompassing definition, presented below, due to its comprehensiveness and because it is inclusive of the several definitions provided over the years.

> "DMs are a **grammatically heterogeneous**, **syntactically optional**, **multifunctional type of pragmatic markers**. Their specificity is to function on a metadiscursive level as **procedural** cues to constrain the interpretation of the host unit in a co-built representation of on-going discourse. They do so by either signaling a **discourse relation** between the host unit and its context, expliciting the **structural sequencing** of discourse segments, expressing the speaker's **meta-comment** on their phrasing, or contributing to the **speaker-hearer relationship**" (Crible, 2017a:58, emphasis in original)

Drawing on Crible's (2017a) definition, key characteristics of DMs, as understood in the present study, are detailed below.

Grammatically heterogenous: Scholars agree that DMs do not belong to a single grammatical class (Müller, 2005). Across studies, different types of words have been classified as DMs, such as verbs (*listen*, *look*), conjunctions (*and*, *but*), adverbs (*well*, *actually*), non-finite clauses (*you know*, *I mean*), response tokens (*right*), interjections (*oh*) and prepositional phrases (*by the way*), to name but a few (Fung, 2011). However, there is lack of consensus regarding an agreed complete set of words that can be categorised as DMs. Furthermore, there is controversy as to whether certain items (e.g. filled pauses: *hmm*, *uh*) should be included or excluded from the category of DMs (Crible et al., 2017).

The fact that different DM inventories have been compiled in the literature (e.g. Carter & McCarthy, 2006; Louwerse & Mitchell, 2010) reflects the complexity of this category. For this reason, several studies have selected target DM types to investigate, although often without justifying the reasons for including some items (e.g. Polat, 2011; Jones & Carter, 2014) or excluding others (e.g. Müller, 2005). The present study focuses only on the

following 10 DMs: *so, well, just, like, I don't know, actually/in fact*[3]*, you know, I mean, kind of/sort of*[4] and the category of general extenders (e.g. *and stuff, or something, and things like that)*. This selection was based on several reasons. Firstly, those DM types have been amongst the most commonly studied DMs in spoken English, both as L1 and learner language. Extensive previous literature enables the researcher to draw links with the present study and understand how its findings (relating to a specific context and population) support or deviate from previous findings. Secondly, the list includes both DMs that have been found to be used frequently by learners (e.g. *well*, *so*) and DMs that are employed less frequently (e.g. *I mean*, *you know*), for reasons that will be discussed in the review of studies in learner DM use (Section 3.2.2). This can guide the discussion of possible factors that support or hinder learners' DM use. Thirdly, a manageable number of DMs under investigation facilitates an in-depth analysis regarding the frequent use of certain DMs and limited use of others, again pointing to factors influencing learner DM use. Further methodological reasons for including those DMs and excluding others are detailed in Chapter 4, Section 4.6.1.2.

Syntactically optional and with variable position in the utterance: DMs are syntactically optional because if they were removed from the utterance, that would not alter the grammaticality of the utterance (Schourup, 1999). This is because they manifest "'outside' the syntactic structure" (Erman, 2001:1339), at a position which, for most DMs, is not fixed, as they can occur in the left or right periphery of the syntactic unit, or in medial position (Aijmer, 2016). In spoken discourse, the boundaries of the unit and the position of the DM in relation to the unit are usually defined by pauses and the speaker's intonation (Buysse, 2012; Aijmer, 2016). A spoken discourse unit is understood as "one proposition or idea or clause between major pause boundaries" (Crible, 2017a:12).

Type of pragmatic markers: Some researchers choose to analyse elements which they term "discourse markers", although the same elements have been classified elsewhere, sometimes along with other types of lexical items, as "pragmatic markers", henceforth PMs (e.g. Castro, 2009). Other authors have used the two labels interchangeably (Romero-Trillo, 2012). This study adopts the view that DMs are a subcategory of the generic and more heterogeneous category of PMs (Carter & McCarthy, 2006; Hansen, 2006). In doing

[3] Following Buysse (2020), *actually* and *in fact* are considered interchangeable and treated as alternative forms of the same DM type.
[4] Following Aijmer (2002) and Kirk (2015), *kind of* and *sort of* are considered interchangeable and treated as alternative forms of the same DM type.

so, it recognises DMs as elements of a coherent category that share the characteristics detailed in this section. It also distinguishes DMs from PMs, the latter including a wider variety of members, such as response signals (*yes*, *no*) and tag questions (*isn't it*), which do not always share all the characteristics detailed presently (Crible, 2017a).

Procedural meaning and fulfilment of non-propositional functions: Another feature of DMs is their "non-propositional" or "procedural" meaning (both terms have been used to refer to the same characteristic). The meaning of DMs, unlike content words (e.g. *table, happy*), does not encompass a concept but a procedure (Crible, 2017a). This procedure is an interpretation process, whereby the DM guides the addressee of the utterance to disambiguate the context and provides them with cues as to how the utterance should be interpreted (Fraser, 1999). For example, *well* as a content word can have the stable, conceptual meaning of "fine" or "thoroughly" which adds to the propositional (i.e. sentential) content of the utterance. As a DM, *well* does not "add or change the propositional content" but signals how the preceding or following segment is to be understood (Haselow, 2017:143). For instance, *well* can signal that it introduces the speaker's turn or that the utterance following the DM mildly contradicts a preceding utterance (Buysse, 2015).

DMs serve textual and interpersonal purposes in the utterance (Aijmer, 2002). As far as their textual role is concerned, DMs connect a preceding segment in the utterance with the current or a following segment, contributing to the coherence of the discourse (Fraser, 1999). In the following example, taken from Buysse (2012:1772), the element *so* has been identified as serving the textual function of introducing a section of the discourse; that is, the beginning of the speaker's turn.

> <Ir> okay thank you go ahead <\Ir>
> <Ie> so er . I have family in England and I've visit them a few times erm and I went last year for two weeks [. . .] <\Ie> (CS05; 00:06)
> [transcription conventions based on Buysse, 2012]

With regard to their interpersonal or communicative role, DMs index a relationship between the utterance, the speaker and the hearer (Aijmer, 2002). In other words, they signal the speaker's intention to convey a message in a certain way to the hearer. In the following example, Aijmer (2016:133), drawing from Clift (2001), suggests that, in using

well and *actually*, the speaker signals "mild contradiction" combined with a softening of "the impact of their answer which may be experienced as undesirable".

> Z> So what are your plans after you graduate? </X>
> A> Well uh actually I didn't think about it seriously <,> <Really <,,> Really I didn't think about it seriously <,> Uhm <,> I myself <,> want to do something in the business field <,> uh in the commerce or <,> even PR <,> the public relations <{1> <[1> field <,> </[1> (ICE-HK:S1A-006#184-188)
> [transcription conventions based on Aijmer, 2016]

Multifunctional: Another property of DMs is their multifunctionality (Schiffrin, 1987; Müller, 2005). DMs are considered multifunctional as they are found to perform different functions in different contexts. A single DM, such as *well*, can fulfil various functions, such as topic-change or mitigation of one's opinion, among others (Aijmer, 2011; Buysse, 2015). Not all functions have been found to be signalled with the same frequency in speech, as some are more salient than others (Müller, 2005; Imo, 2006; Gilquin, 2008; Polat, 2011). Because of their multifunctionality, the assignment of a function to a DM in the discourse is performed by the researcher and, hence, is of a subjective nature. Nevertheless, studies have developed functional taxonomies for different DMs (e.g. *so* in Müller, 2005; *actually* in Aijmer, 2016; *you know* in Buysse, 2017).

L1 speakers of English embed DMs frequently in their spoken discourse and interactions (Beeching, 2016). This frequent use is owing to the function of DMs in the discourse, as already discussed: DMs are used at the textual level to manage the conversation by creating coherence, and at the interpersonal level, to establish social rapport between speaker and hearer (Haselow, 2017). This renders DMs an indispensable part of spoken communication, ensuring that it flows smoothly (Aijmer, 2002; Fung & Carter, 2007; D'Arcy, 2017).

However, for L2 learners, the inherent characteristics of DMs may render their acquisition problematic. For example, because DMs are multifunctional and not all of their functions are equally salient in the input (Müller, 2005), the learner might have difficulty acquiring all functions of a DM. DMs may even go unnoticed by the learner-hearer of the utterance given their low lexical value, i.e. DMs do not embody a concept (like content words do) but rather function as instructions of how to interpret the message (Blakemore, 2002; Crible, 2017a). Furthermore, because of their syntactical optionality, omission of DMs

does not render the utterance of a learner-speaker grammatically erroneous and therefore is less likely to cause communication breakdown as opposed to overt errors, such as wrong word choice or grammar mistakes (Gilquin, 2016). Hence, a learner might not always become aware of "pragmatic misunderstandings" (Polat, 2011:3745) that could be caused by omitting or misusing DMs, such as sounding authoritative, rude, or awkward (Svartvik, 1980). Although their acquisition might be problematic, DMs render a learner's spoken discourse in social interactions more natural sounding and unrehearsed (McCarthy & McCarten, 2018; Jakupčević, 2019).

To summarise, despite issues in defining and delimiting DMs, there is overall agreement that DMs constitute a crucial element of social interaction due to their functions (Gilquin, 2016). The following section presents an overview of previous learner DM literature across learning contexts.

3.2.2 Study of learners' spoken DM use in different contexts

This section reviews cross-sectional and longitudinal studies of learners' spoken DM use. Because the present study focuses on learners' spoken English DM use and for comparability purposes, studies on learner written DM use (e.g. Martín-Laguna & Alcón-Soler, 2018) or on L2s other than English are outside the scope of this literature review and therefore excluded. Cross-sectional studies examine DM use at one point in time, whereas longitudinal studies investigate DM use over time. Before reviewing each type of studies (Sections 3.2.2.1 and 3.2.2.2, respectively), an overview of the overall scope of the literature is presented below, identifying common trends in research.

A common aim of studies is to describe learner DM use and assess the extent to which DMs are acquired by learners. In order to elicit learners' spoken data and provide insight into different characteristics of learner DM use, researchers employ instruments such as interviews or narrative tasks. Among the most commonly researched characteristics of learner DM use are DM frequency (i.e. number of DM tokens used, e.g. how many times a learner has used the DM *well*) and DM range (i.e. the number of different types of DMs a learner has employed). Researchers have also carried out functional analyses to identify the function each DM token signals in participants' speech.

Studies have investigated the DM frequency, range and functions in the discourse of learners of various proficiency levels (beginners, intermediate, advanced) and L1s (e.g. Chinese, Italian, Dutch, French). The norm in DM studies is to assess learner DM use against a benchmark of L1 DM use or, as researchers term it, a "native speaker" (henceforth NS) benchmark, given that the aim of most studies (e.g. Aijmer, 2011; Buysse, 2020) is to evaluate the acquisition of DMs by learners against a target norm and identify whether they overuse or underuse the DMs and their different functions in comparison to the target. Reference corpora for English DM use tend to include one variety of English spoken discourse, such as British, American, Australian, or Irish, but not a variation of L1 speakers in one corpus. Researchers posit that the use of reference corpora is not so as to set the NS DM use as the ideal endpoint. Instead, comparisons with NS corpora are believed to provide an indication of whether learners have picked up language spoken, for example, by those around them in a particular geographical area (Polat, 2011).

However, research that compares learner to NS DM use is not without its caveats. One limitation concerns the choice of NS discourse to which learner discourse is compared. Researchers have acknowledged that learner corpora are often collected under different conditions from NS corpora (Fung & Carter, 2007). Furthermore, learner and NS samples are not always fully comparable. For example, participants might be of different status; in Magliacane and Howard's (2019) study, learner participants, who were university students, were compared to an NS group that comprised students but also language teachers. In other studies, the NS sample was rather small (e.g. 10 NSs compared to 72 learners in Ament et al., 2018). These issues can limit the validity of the comparison between learners and NSs. Although some studies posit that data collection of learner and NS corpora took place under similar circumstances and followed the same format (e.g. Gilquin, 2016; Buysse, 2017), the preference for certain NS corpora over others (e.g. British vs. American), or their appropriateness for each study, is rarely justified. A final issue concerns "the problematicity of native speaker benchmarking" (Roever, 2011:463); there is a debate over the conceptualisation of the notion of "native speaker" and whether NSs' use of language should be set as a yardstick to measure learners' language use (Schmitz, 2013). For these reasons, the present study does not use NS benchmarking.

Besides describing and evaluating learner DM use, some studies have also examined whether and the extent to which different contextual and individual factors influence DM use, either supporting it or hindering it. Among the most widely studied contextual factors (i.e. factors outside the individual) are formal instruction (Hellermann & Vergun, 2007)

and opportunities for naturalistic L2 exposure available in the context of learning (Gilquin, 2016). Individual factors investigated (i.e. factors within the individual) are L2 oral proficiency (Wei, 2011), stated motivation (Ament, 2018), L1-transfer (Liu, 2013), age (Müller, 2005) and gender (Bu, 2013).

Given that the context of learning plays a crucial role in Complex Dynamics System Theory (CDST, Larsen-Freeman, 2018), the literature review first focuses on studies whose findings reveal a positive or negative impact of the overall learning context on DM use (Sections 3.2.2.1 & 3.2.2.2). Subsequent sections (3.3–3.5) discuss previous literature on specific contextual and individual factors that have been or could be associated with learner DM use.

As discussed in Section 2.1, context is of paramount importance in CDST, as it might influence the behaviour of the system under investigation (Hiver & Al-Hoorie, 2016). In L2 pragmatics, the individual speaker(s) and context are integrated in order to explain pragmatic use and identify ways in which the context supports or hinders pragmatic development (Taguchi, 2015a). Research into L2 (English) DM use focuses on two main contexts:

(a) Contexts of learning and using DMs inside an English-speaking country, where English is learned or used as a Second Language (ESL context). Studies have looked into the DM use of individuals who reside in the L2 country as short-term or long-term visitors (e.g. Study Abroad students, Liao, 2009) or as residents (e.g. migrants, Diskin, 2017). Learners might attend lessons in ESL classrooms (e.g. Hellerman & Vergun, 2007).

(b) Contexts of learning and using DMs outside an English-speaking country, often in one's home country. English is learned or used as a Foreign Language (EFL context, e.g. Müller, 2005), or constitutes the medium of instruction in learners' university education (English as a Medium of Instruction, EMI context, e.g. Ament et al., 2019). It must be noted that the L2 learning of individuals in EMI settings is considered qualitatively different from those in EFL classrooms, principally due to EMI students' increased opportunities for L2 exposure and use (Ament et al., 2019).

It must be acknowledged that there can be overlap between the two contexts and types of learners (i.e. ESL vs. EFL/EMI). For example, ESL learners (e.g. migrants) might have started learning the language in their home country as EFL learners before migrating. Or EFL learners can spend time in ESL contexts (e.g. trip or study abroad). The distinction between ESL and EFL contexts (and learners) is not necessarily based on where the learner started learning the language or where they have primarily learned the language; but it is based on the status of the learner when the research is conducted and, therefore, the context of the individual's exposure to and use of the language at the time when their DM use was examined.

This study focuses on individuals who learn and use DMs in an EFL context. Although there is a scarcity of studies that compare the DM use of learners in different contexts, EFL learners are considered to be at a greater disadvantage comparatively, regarding their DM use (Gilquin, 2016). By providing an overview of cross-sectional and longitudinal studies in EFL and ESL contexts, the aim is, firstly, to understand the characteristics of learner DM use and, secondly, to identify possible reasons which are thought to hinder the DM use of learners in EFL contexts, in particular.

3.2.2.1 Cross-sectional studies

This section presents the main findings of cross-sectional studies on the spoken DM use of learners in ESL and EFL contexts. What emerges from cross-sectional DM studies, in general, is that irrespective of learning context, age, proficiency level and L1 background, learner DM use is limited compared to NS DM use. More specifically, learners employ DMs with lower frequency than NSs (Beeching, 2015; Lim, 2018) and their speech displays a narrower range of DMs, as learners tend to rely on using markers such as *well* and *so*, while not employing others, such as *you know*, *I mean*, *like*, *kind of*, *sort of* (Fung & Carter, 2007; Buysse, 2017; Liu, 2013; Lin, 2016; Gilquin, 2016). This section briefly reviews the ESL context before focusing on the EFL context, as the latter constitutes the research background of the present study. The end of the section presents an evaluation of the assumptions made regarding the relative disadvantage faced by EFL learners, pointing to the need for future research.

Unlike EFL learners, individuals in ESL contexts are believed to have more frequent exposure to input that contains DMs, as well as more opportunities for using DMs through

social interactions with the L2 community (Gilquin, 2016; Martín-Laguna, 2019). Frequent exposure to input and repeated usage of the language can trigger learning mechanisms, such as pattern finding and entrenchment (Tomasello, 2009), which, as discussed in Chapter 2, can drive L2 acquisition, according to usage-based approaches to language learning (Vespoor & Behrens, 2011; Ellis, 2019). Additionally, ESL learners have increased opportunities to notice and process the input, which, drawing on the Noticing Hypothesis (Schmidt, 1990; 2012), is considered a prerequisite for the acquisition of L2 pragmatics (Kasper & Rose, 2002; Alcón Soler, 2005; Taguchi & Roever, 2017). Because DMs are widely used by NSs and are frequent in spoken input and social interactions (Aijmer, 2002; Fung & Carter, 2007; D'Arcy, 2017), exposure to such input and language use by learners in ESL contexts can reinforce learners' DM use.

DM studies in ESL contexts have underscored the importance of exposure to L2 input through contact with and integration into the L2 community; a process known as "L2 acculturation" (Sankoff et al., 1997; Hellermann & Vergun, 2007; Diskin, 2017). Findings have revealed that learners who felt more acculturated to the local community, such as by constantly interacting with NSs or using L2 media (e.g. TV), had higher DM frequency and broader DM range than learners with limited L2 exposure or who mainly socialised with speakers of their own L1 (Liao, 2009; Liu, 2016). Others have shown that L2 exposure and socialisation, often conceptualised and measured through length of residence in the L2 country, played a more determining role in higher DM frequency and wider DM range than other factors, such as learner proficiency (Diskin, 2017) or formal instruction (Hellermann & Vergun, 2007).

However, length of residence might not always be an indication of actual engagement in the L2 or NS contact (Roever et al., 2014). Individuals might prefer to stay within the boundaries of their own L1 community and avoid assimilating to the local culture or adopting language norms, due to, for example, strong L1 identity awareness (Liao, 2009). Availability of opportunities for L2 engagement might also depend on the stance of the local community towards "outsiders", be it temporary student-visitors or immigrants (Coleman, 2013). Therefore, whereas integration to the L2 community is expected in ESL contexts, it is not always guaranteed (Taguchi, 2015a). As a result, there is no sufficient evidence for whether and the extent to which L2 exposure and use in ESL contexts is more important for DM use relative to other factors.

Turning to individuals who learn the language in EFL contexts, which are the focus of the present study, the context has been perceived to hinder their acquisition of L2 pragmatic features, such as DMs (Gilquin, 2016). What appears to differentiate pragmatic learning and use in EFL from ESL contexts is the perceived limited exposure to the L2 and fewer opportunities to use the language and interact with L2 others (Romero-Trillo, 2002; Taguchi, 2015a; González-Lloret, 2019). Furthermore, according to Gilquin (2016:236), "acculturation is more likely to occur in an ESL environment where English is culturally anchored than in an EFL environment where it is culturally foreign". Research into EFL learners' DM use and opportunities for exposure to naturalistic input and interaction in the L2 is rather limited. Nonetheless, the studies that have been conducted (reviewed below) suggest that EFL learners who benefit more in terms of their DM use are those who have had L2 exposure and interactions with NSs in ESL or ESL-like settings.

In a study of 554 university EFL learners from eleven different L1 backgrounds (Bulgarian, Chinese, French, Dutch, German, Greek, Italian, Japanese, Polish, Spanish, Swedish), Gilquin (2016) investigated the use of seven DMs: *and so, and then, I mean, like, sort of, well* and *you know*. The author analysed data from the Louvain International Database of Spoken English Interlanguage ("LINDSEI", Gilquin et al. 2010) which contains spoken data from informal interviews. Information on the time learners had previously spent in an English-speaking country was also collected. The Louvain Corpus of Native English Conversation (De Cock, 2004), which is regarded "an exact replica of LINDSEI" and contains British data (Gilquin, 2016:218), was used as a benchmark, against which learner DM use was evaluated. Gilquin's (2016) findings firstly confirmed the general tendency in learner DM use, namely that learners overall use fewer DMs, compared to NSs, and overuse certain markers (e.g. *well*). However, learners who had spent some time in an English-speaking country (ranging from one week to nine years) displayed wider DM range than learners who had not, while DM frequency increased with length of stay.

In Gilquin (2016), further comparisons were made between learner populations whose home-country was more EFL-like or more ESL-like in terms of L2 exposure. Based on general assumptions (by compilers of the corpus) about the status and use of English in traditional written and spoken media (e.g. newspapers, TV) and the internet in each country, the eleven populations were placed on a continuum of those whose country resembled more an ESL or EFL environment. For example, the Greek population was placed towards the ESL end of the continuum as the author perceived that Greeks had

extensive access to English input through media, whereas the Chinese population was towards the EFL end, as use of English media was considered limited. The study demonstrated a tendency for learners in more ESL-like contexts to use certain DMs more frequently than those in EFL-like countries, where access to naturalistic L2 input was considered restricted. However, an unexpected finding, according to the author, was that the Greek population had low DM frequency despite being placed at the ESL end of the continuum.

Although Gilquin (2016) demonstrated that exposure to naturalistic input is crucial for learners' DM use, her findings suggest that such exposure is limited in EFL contexts unless English is widely accessible and used in the L1 country's offline and online media, or unless learners spend time in an English-speaking country (i.e. in ESL contexts). Therefore, learners in more EFL-like contexts are perceived to be in a disadvantageous position. However, a caveat should be voiced regarding the data the researcher drew upon to characterise the countries as ESL-like or EFL-like, and which could also explain the study's unexpected finding regarding the Greek population. More objective evidence regarding exposure to naturalistic input could have been provided had data been collected from participants' own accounts of day-to-day L2 engagement through media and the internet rather than from general reports of third parties. Owing to the corpus-based nature of the study, this might not have been feasible. The question however still remains about Greek learners' exposure to English through the media and the internet and its effect on their DM use.

Müller (2005) also showed that time spent in an English-speaking country and interaction with L2 speakers can contribute to more native-like usage. Müller (2005) analysed the use of *well, so, you know* and *like* by 77 L1 German learners of English at a university in Germany. Data were compared to 34 American English NSs. Data relating to learners and NSs were extracted from the Giessen-Long Beach "Chaplin" Corpus, which contains conversations in English between dyads, most of them between speakers of the same L1. Participants were shown a silent movie which they had to retell and discuss. Questionnaires were administered to collect data on factors that were thought to influence learner DM use (e.g. primary means of communication with family and friends, and time spent abroad). The findings align with the general trend, namely the differences in the DM use of learners and NSs, as learners employed *so, you know* and *like* to a significantly lesser extent than their NS counterparts but used *well* twice as often. Participants who had native-like usage (in terms of frequency and functions signalled) with regard to *so* and *like,*

reported having frequent contact with NSs in informal settings (i.e. English was the primary language of communication with family or friends) and had also spent time in an English-speaking country (more than 4 weeks).

As the two aforementioned studies empirically revealed, and as others have suggested (e.g. Davydova & Buchstaller, 2015; Ament et al., 2018), unless there has been increased exposure to ESL (or ESL-like) contexts and NS communication, EFL learners' acquisition of DMs will remain constrained.

What has also been found to impact EFL learners' DM use is formal language education. The language classroom is believed to be the principal, if not the only, outlet inside EFL contexts for exposure to and use of L2 pragmalinguistic features (Hasler-Barker, 2016; Culpeper et al., 2018), including DMs (Romero-Trillo, 2002; Martín-Laguna, 2019). However, explicit teaching of DMs for use in spoken discourse is usually not included in the classroom curriculum (Müller, 2005; Fung & Carter, 2007; Okati & Ghasedi, 2017; Buysse, 2017). This may in part be because traditional classroom settings have focused on written language (Fung & Carter, 2007; Fung, 2011). Moreover, spoken DMs, as is the case with pragmatic devices in general, may be seen as "subtleties" of the language and less urgent to teach than, for example, grammar (Buysse, 2011:25).

Besides lack of explicit DM instruction, scholars have referred to the poverty of DM input in formal education settings, where textbooks and teachers' use of DMs constitute limited models for students' DM use (Hellermann & Vergun, 2007; Buysse, 2017). On the one hand, there is overrepresentation of certain DM types, particularly the DM *well* in textbooks (Müller, 2005) or the markers *so* and *okay* in teachers' discourse (Ding & Wang, 2015; Vickov & Jakupčević, 2017). On the other hand, there is restricted presence and even absence of other markers, such as *like, I mean, you know* or the category of general extenders, in teaching materials and classroom practices (Mukherjee & Rohrbach, 2006; Fung, 2011; Gregori Signes, O'Mara Shimek & Planells Bolant, 2016). For instance, Müller (2005) found that *well* was by far the most common marker in textbooks aimed at German L1 learners of English, followed by *so,* whereas *you know* was used to a much lesser extent and *like* was absent. In terms of DM functions, studies have suggested that there is more extensive use of textual than interpersonal functions, as teachers employ textual markers more frequently to structure their discourse, for example to elaborate and exemplify, transition between activities, or mark openings and closings (Vickov & Jakupčević, 2017; Ament et al., 2018).

A possible reason for the imbalanced representation of DMs and functions in the EFL classroom, and perhaps connected to the relative underuse of DMs by learners, is the different degree of their appropriateness and formality (Buysse, 2011). Whereas DMs such as *well* and *so* are generally acceptable in educational settings given their ubiquity in formal and informal registers (Buysse, 2015), markers such as *like*, *you know*, *I mean* and *kind of* have been regarded as colloquial, inappropriate in formal, and especially academic, L1 and L2 settings, and are even stigmatised (Andersen, 2000; Miskovic-Lukovic, 2009; Davydova, 2019). In addition, unlike textual functions, interpersonal functions have been associated with informality (Buysse, 2010). Consequently, EFL learners tend to overuse certain DMs (e.g. *well* in Buysse, 2015) or functions (e.g. textual functions in Ament et al., 2018), whilst not employing others.

At the same time, DM use is one of the several criteria for which assessors award marks in the oral part of high-stakes language proficiency examinations for the attainment of a certificate in English (Cambridge Assessment Scale for Speaking, 2011; IELTS, 2021). EFL learners sit for those exams, given that attainment of a language certificate can secure them a job or study in their country or abroad (British Council, 2021). Although exam guidelines seldom provide a comprehensive definition or list of DMs that are expected by exam candidates, one criterion to achieve the highest score in the assessment rubric is if the candidate "uses a wide range of [...] discourse markers" (Cambridge Assessment Scale for Speaking, 2011:2) or "uses a range of [...] discourse markers with some flexibility" (IELTS Speaking Band Descriptors, 2021:1).

To summarise, DMs constitute an integral part of spoken discourse and interaction, and there is an expectation for EFL learners to employ them for the attainment of language certificates. However, studies have highlighted the confines of EFL contexts in learner DM use, often referring to constrained opportunities for L2 exposure and use, as well as the limits of formal language education.

But is the poor reputation of EFL contexts completely justifiable, or has DM research investigated EFL learners' naturalistic L2 exposure and use only partially? Some caveats of cross-sectional research to date should be voiced. The present study argues that EFL contexts have been conceptualised in a limited way in spoken DM research. Scholars have studied EFL learners' exposure to naturalistic input and interactions with L2 others in the traditional sense; that is, outside, rather than inside, EFL contexts: through the number of

visits to and length of stay in English-speaking countries, and through NS contact (e.g. Müller, 2005; Gilquin, 2016; Davydova et al., 2017). However, similar to length of residence in ESL contexts as already discussed, length of stay abroad is considered an insufficient and unreliable predictor of L2 exposure and contact (Kasper & Roever, 2005; Pawlak, 2010; Roever et al., 2014). Furthermore, unless the study has been conducted in ESL contexts (e.g. Liao, 2009; Beeching, 2015; Liu, 2016), researchers have seldom provided information on the specifics of EFL learners' previous stay(s) abroad, such as who they interacted with, what kind of input they were exposed to, how often, or their attitudes towards L2 communication.

More importantly, research has neglected to examine in detail and measure objectively EFL learners' L2 exposure inside their own country as well as their interactions with L2-others there (and not necessarily with NSs who might be inaccessible, unless the learner is physically present in an L2 community). Instead, EFL contexts have been equated with formal instructional settings, not only in DM research (Romero-Trillo, 2002; Gilquin, 2016; Martín-Laguna, 2019), but in L2 pragmatics literature in general (Taguchi, 2015a; González-Lloret, 2019). There is scarce evidence of EFL learners' L2 engagement outside the classroom and the effect such engagement might have on their pragmalinguistic L2 learning and use. This could be due to a misconception in L2 pragmatics research that social interactions and exposure to naturalistic input, which can reinforce the acquisition of L2 pragmatics, are only feasible in ESL contexts (e.g. Bardovi-Harlig & Bastos, 2011), or are largely dependent on the teacher and classroom interventions in EFL contexts (e.g. Takamiya & Ishihara, 2013; Cunningham, 2016; Sykes, 2018).

However, as will be discussed in Section 3.3, EFL learners are not restricted to contact with the L2 community in the traditional sense, but can have self-initiated access (i.e. without the guidance or control of a teacher) to naturalistic L2 input through the internet and new technologies (e.g. smartphone applications), which can enable them to engage online with L2 speakers from around the globe (Dressman & Sadler, 2020). It is vital that DM research considers EFL learners' self-initiated, out-of-class L2 engagement in the physical L1 context with or without the use of technology; in other words, their Informal Second Language Learning (ISLL). Previous spoken DM research in EFL contexts has not examined learners' ISLL. It is also crucial to examine the ISLL effect on DM use, by gathering data from the participants themselves rather than resorting to general assumptions about the status of English in the learner's country (e.g. Gilquin, 2016).

Finally, a general limitation of cross-sectional DM studies is that they provide only a reductionist snapshot on learner DM use. However, drawing on CDST, language learning is a complex adaptive system which develops and changes over time (Hiver & Al-Hoorie, 2020), and a learner's system is under the influence of different contextual and individual factors, which interact over time (de Bot & Larsen-Freeman, 2011; Vespoor, 2015). In order to "capture the nature of complex developmental processes" (Scholz and Schulze, 2017:103) as well as track whether and the extent to which different factors contribute to pragmatic development (Culpeper et al., 2018), longitudinal studies are necessary. The following section reviews the findings of longitudinal DM research.

3.2.2.2 Longitudinal studies

This section reviews longitudinal studies of learners' spoken DM use (Polat, 2011; Jones & Carter, 2014; Tavakoli, 2018; Ament et al., 2018; Magliacane, 2017; Magliacane & Howard, 2019; Magliacane, 2020). As will be seen, a common link between most studies is a focus on university students in ESL contexts (either Study Abroad or Immigrant studies); EFL contexts are largely underrepresented. Most aspects of their methodologies (e.g. duration, DMs under examination, participants' L1, data analysis) vary, and the synthesised findings are largely inconclusive, complicating an overview of common key findings. Table 3.1 provides a summary of recent studies. These are then reviewed in detail with a focus on in-depth descriptions of their methodology and findings, in order to subsequently discuss their methodological and other limitations, which the present study (also longitudinal) will address.

Table 3.1 Overview of longitudinal studies on learners' spoken DM use to date.

Study	DMs studied	Context	Participants	Duration	Quantitative analysis of DM development	Results	Other factors studied
Polat (2011)	*you know, like, well*	ESL (USA)	1 L1 Turkish adult immigrant	1 year (24 data collection points)	Descriptive statistics	Decline in frequency of *you know,* fluctuation in frequency of *like.*	Use of L2 at home and work
Jones & Carter (2014)	Various	Study Abroad, English for Academic Purposes (EAP) classroom intervention (UK)	36 L1 Chinese university students	5-day instruction, immediate & delayed post-tests (after 8 weeks)	Descriptive statistics	Mixed findings depending on DM.	Type of DM instruction
Tavakoli (2018)	Various	Study Abroad (UK)	40 EAP university students of mixed L1s	4 weeks (2 data collection points)	Univariate t-tests	Statistically significant increase in DM frequency	Task conditions
Ament, Pérez Vidal & Barón Parés (2018)	Various	English as a Medium of Instruction, EMI (Spain)	39 full-EMI & 33 semi-EMI university students	Pseudo-longitudinal (Year 2 and Year 3 students)	2x2 ANOVA, 2x2 ANCOVA	Statistically significant increase in range, overall DM frequency, textual frequency, no change in interpersonal frequency	Length and Intensity of immersion
Magliacane (2017); also, Magliacane & Howard (2019), Magliacane (2020)	*yeah, I mean, you know, like, well, I think*	Study Abroad (Ireland)	15 Erasmus university students (ES) & 15 au-pairs (AU) of L1 Italian	6 months (2 data collection points)	Paired t-tests	Statistically significant increase in frequency of *like* by both groups, no change in most markers	L2 input exposure & NS interaction

In one of the earlier longitudinal L2 DM studies, Polat (2011) examined the frequency of *you know*, *like*, and *well* in the spoken discourse of an untutored but reportedly proficient L1 Turkish adult immigrant (Alex) after 2.5 years of residence in the USA. The researcher collected DM data and data on Alex's reported exposure to English at home and work through interviews every two weeks over a year. The results of monthly analysis through descriptive statistics showed that Alex's use of *you know* declined and his use of *like*, although initially showing an increase, gradually decreased. *Well* was never employed as a DM. Comparisons with the Santa Barbara Corpus of Spoken American English (Du Bois et al., 2000), which contains informal spoken data, showed that Alex's frequency of *you know* and *like* surpassed that of NSs. The author suggested that increased naturalistic L2 exposure and NS contact favoured the use of *like* and *you know*, whose functions were considered as being more salient in social interactions than those of *well*, but lack of formal DM instruction might have resulted in Alex's uneven DM use, i.e. non-employment of *well*. However, as seen in Section 3.2.2.1, formal instruction might also favour a reliance on certain markers (more formal) and avoidance of others (more interactional and informal). Although the author provided insight into factors influencing the participant's overall DM use, there is little if any justification for the different developmental patterns (decline, fluctuation), despite it being a longitudinal study.

In a similar ESL context but in a different type of study and a larger sample, Jones and Carter (2014) implemented a classroom intervention at an English for Academic Purposes course at a UK university to examine the effect of different types of DM instruction on spoken DM use. The participants were 36 L1 Chinese study abroad university students of B2 CEFR level of proficiency. Among the various DMs instructed were: *you know, I mean, well, anyway, like, so*. A speaking test (pre-test) was administered prior to classroom intervention and then, depending on the group they were assigned to, participants attended Illustration-Interaction-Induction (III), Present-Practice-Produce (PPP)[5] or no DM instruction for 5 days. The researchers administered a speaking test after the 5-day intervention (immediate post-test), and a delayed post-test 8 weeks later. The results of descriptive statistics were mixed. There was an increase from pre- to immediate post-test in the DM frequency of the III and PPP groups but a decrease in the control group. At the same time, there was a decrease from immediate to delayed post-test for the III and PPP groups but an increase in the control group. Further comparisons between the groups

[5] Whereas PPP focuses on learners being presented with the target structure and then practising it through drills and freer production, the III framework prioritises noticing of the structure in the input and analysis of its characteristics rather than practice (Jones & Carter, 2014).

through one-way ANOVA revealed only a short-term positive effect of PPP instruction on DM use (given the PPP group's increased DM frequency in the immediate post-test) but attrition of formal instruction over time (given the non-significant differences between the three groups in the delayed post-test). Interview data showed a desire of individuals to practise DMs in real-world interaction in the target language community rather than inside the class.

In a similar Study Abroad context in the UK, Tavakoli (2018) looked into the DM frequency, among other measures of complexity, accuracy, lexis and fluency of 40 EAP students of mixed L1s and of a B2 CEFR proficiency level. Spoken data were collected twice over 4 weeks, through monologic and dialogic tasks. The results of univariate t-tests showed that DM frequency significantly increased over time. More specifically, students increased their frequency of two-word or longer DMs (e.g. *Sorry for interrupting you*) at Time 2, whereas no increase was observed for one-word DMs. However, an important caveat should be mentioned. Longer-word lexical items, which were regarded by Tavakoli (2018) as DMs, constitute stand-alone sentences or routines (e.g. *I see where you are coming from, Can I just come in*) and seldom appear in other DM studies nor have been categorised as DMs by other scholars (e.g. Crible, 2017a). The author did not investigate contextual or individual factors to explain the increase in DM frequency over time but suggests that intensive EAP instruction combined with the context conditions of study abroad can play a positive role.

Another Study Abroad DM study was conducted by Magliacane (2017). In her PhD research (and in subsequent publications, i.e. Magliacane & Howard, 2019; Magliacane, 2020), Magliacane (2017) examined the spoken use of six DMs (*yeah, I mean, you know, like, well, I think*) by 15 Erasmus university students (ES) and 15 au-pairs (AU) of L1 Italian in Ireland, and compared their use to 10 NSs. Data were collected twice at the beginning and end of a six-month period through interviews. The results of paired t-tests revealed a statistically significant increase in the frequency of only two DMs for each group (ES: *like, I mean*; AU: *like, well*), whereas no significant change was documented for the remaining markers. Of all markers examined, *like* underwent the most extensive, statistically significant increase in both groups. The author interpreted the study findings through the lens of exposure to input in the L2 community and NS contact, data for which were gathered through questionnaires and interviews. Significant change in the frequency of *like* was attributed to learners' exposure to naturalistic input given the extensive use of *like* in Irish English. Differences between the two groups in terms of DM frequency and

functions signalled were related to the type of input received and NS interactions; whereas the ES group mainly interacted with other non-NSs, the AU group had more frequent NS interactions but mainly engaged in short conversations with NS children whose DM use has been considered restricted (Romero-Trillo, 2002).

Contrary to the aforementioned studies which were carried out in ESL contexts, Ament et al.'s (2018) study was conducted in the context of learning and using the language in one's home country. However, the study is pseudo-longitudinal: instead of tracking the DM use of the same individuals over time, the authors compared groups of different students from Year 2 with students from Year 3 of their university studies. The authors examined the DM range, overall DM frequency and frequency of markers signalling textual and interpersonal functions in the spoken discourse of 39 full-EMI and 33 semi-EMI university students in Spain, most of whom were Spanish-Catalan bilinguals. For full-EMI students, their degree programme (425 hours) was instructed in English, whereas for semi-EMI students, only part of their degree (35 hours) was instructed in English. A monologue and an interaction task were employed to elicit data on a number of DMs, such as *well, I think, sort of, like, exactly*. Effect of proficiency was controlled for, as Year 3 students were found to be more proficient than Year 2 students. Results from 2x2 ANCOVAs and ANOVAs showed that students with more years of EMI exposure (Year 3), both full-EMI and semi-EMI, had significantly wider DM range, higher overall DM frequency and higher frequency of textual markers than students with fewer years of EMI exposure (Year 2), both full-EMI and semi-EMI. Furthermore, full-EMI students outperformed semi-EMI students in most measures. However, no differences were found between groups regarding the frequency of markers with an interpersonal function. Compared to a baseline group of 10 NSs, EMI learners overused textual markers but underused interpersonal markers. The authors suggest that EMI contexts encourage an increase in DM use over time, as both the length and the intensity of EMI exposure had a positive effect. However, the overuse of textual markers and the underuse of interpersonal markers might have been a result of the formal, academic nature of EMI lectures, where, as the authors claimed, textual markers are more frequent than interpersonal markers.

A synthesis of the aforementioned studies reveals mixed findings. Studies have documented significant increase in aspects of DM use over time (Tavakoli, 2018; Ament et al., 2018; Magliacane, 2017), or no statistically significant change (Magliacane, 2017; Ament et al., 2018), and even decline (Polat, 2011; Jones & Carter, 2014). Despite that, a general takeaway from all studies is some evidence that multiple factors might be at play

influencing development of DM use, particularly those related to the context of use (exposure to DMs, interactions with L2 others) and aspects of formal instruction. However, evidence is tentative and there are important limitations that should be voiced.

Firstly, there are methodological limitations in the way studies have measured development over time. Earlier studies (Polat, 2011; Jones & Carter, 2014) did not employ appropriate statistical tests to capture change over time but rather relied on descriptive statistics; that is, a tally of DM tokens at different time points and subsequent comparisons. Results of those studies should be treated with caution because, due to a lack of tests of statistical significance (i.e. inferential statistics), it cannot be determined whether the observed patterns (i.e. increase, decrease, fluctuations) are a developmental phenomenon; that is, that change is meaningful rather than random (van Dijk et al., 2011). Other studies (Tavakoli, 2018; Magliacane 2017), albeit longitudinal, employed limited design choices by examining change only between two time-points and resorting to statistical techniques employed in cross-sectional studies (e.g. t-tests). According to Ortega and Iberri-Shea (2005:40), such studies are "conceptually cross-sectional, and only indirectly longitudinal". CDST scholars argue that in order to track developmental change, researchers need to adopt CDST study designs and methods of analysis that capture "key turning points", "stagnation" or "nonlinear progress" (e.g. acceleration, deceleration of progress) (Ortega & Iberri-Shea, 2005:41; Barkaoui, 2014). Capturing such developmental phenomena is vital because it provides a more accurate portrayal of the complex process of language learning and use, i.e. growth, change or lack thereof (Hiver & Al-Hoorie, 2020). This requires three or more repeated measures (i.e. data collection points) of the phenomenon under scrutiny and, more importantly, more advanced statistical techniques (Barkaoui, 2014; Murakami, 2016). None of the aforementioned studies have adopted the CDST framework in theory nor in methodology. Similarly, Ament et al.'s (2018) pseudo-longitudinal study offers little insight, as it did not track the DM use of the same individuals.

Another limitation of some of the aforementioned studies concerns the way authors interpreted their results. There has not always been adequate explanation provided of what drove or influenced change, or lack thereof, in DM use in each study. This is because some studies have either neglected to do so (e.g. Polat, 2011) or have only offered post-hoc interpretations of change (e.g. Tavakoli, 2018). Furthermore, individual factors (e.g. motivation) are underexplored, as studies have primarily focused on contextual factors (e.g. length and amount of L2 exposure). Adopting a CDST framework would enable the

tracking and consistent measurement over time of various individual and contextual factors (i.e. the control parameters of a system), their interrelationship and the ways they influence changes, or lack thereof, in the phenomenon of interest (Hiver, 2015; Hiver & Al-Hoorie, 2016; Lowie, 2017), i.e. DM use.

Last but not least, EFL contexts are largely underrepresented in longitudinal DM research. All aforementioned studies were conducted in contexts where the learner had extensive L2 exposure, either in naturalistic settings (e.g. Polat, 2011) or in instructional settings (EMI education in Ament et al., 2018). In those studies, there were potentially more opportunities for participants to interact with L2 others (e.g. Magliacane, 2017; Tavakoli, 2018) than in purely EFL contexts. These conditions have been claimed to encourage spoken DM use. Although it can be suggested that these conditions could also encourage positive change, that was not always the case. As Ament et al. (2018) and Magliacane (2017; 2020; Maglicane & Howard, 2019) posit, different types of exposure and interactions could be associated with different developmental patterns for different markers or types of DM functions. The question remains as to what type of developmental pattern could be observed in the DM use of learners in EFL contexts, where opportunities for L2 exposure and contact with L2 others present themselves differently, as well as what factors could be related to change or lack thereof in EFL learners' DM use.

The underrepresentation of longitudinal DM studies in EFL contexts reflects the dearth of longitudinal (E)FL[6] research in L2 pragmatics in general (Culpeper et al., 2018). In reviews by Taguchi (2010; 2015a; 2015b) and González-Lloret (2019), most longitudinal studies reviewed are instructional interventions, similar to Jones and Carter (2014) (e.g. Takamiya & Ishihara, 2013; Cunningham, 2016). Or the context of learning in participants' home country has been in some other way artificially controlled by the teacher-researcher: learners have taken part in teacher-initiated projects which provided students with increased exposure to input and/or NS contact. Students' pragmatic development was measured as a result of participation in the project (e.g. Sykes, 2013; Taguchi, Li & Tang, 2017). However, because in both types of studies the context has been manipulated by the researcher, this makes it difficult to understand and evaluate the true nature of EFL contexts and their possible limitations or strengths.

[6] (E)FL because research has also looked into the learning of languages other than English (e.g. Spanish, Japanese).

Furthermore, contrary to the reviewed studies on spoken DM use, most longitudinal L2 pragmatics research has focused on written rather than spoken pragmatic development (e.g. Gonzales, 2013; Kim & Brown, 2014) and on L2s other than English (e.g. Spanish in Sykes, 2013; Chinese in Ren, 2019). In terms of data analysis, studies have seldom employed robust analytical methods to measure development over time, often relying on qualitative methods, which are prone to researcher subjectivity (e.g. Blattner & Fiori, 2011; Sykes, 2013; Kim & Brown, 2014). Studies which have quantitatively measured development have reported mixed findings: increase in gains (e.g. Taguchi et al., 2017) or no developmental change (e.g. Cunningham, 2016). As Takahashi (2019) observes, L2 pragmatics research, with the exception of work by Taguchi (2012), has not been CDST-theory driven. Therefore, there is undoubtedly a need for further CDST-informed exploration of spoken pragmatic development in EFL contexts in order to understand the phenomenon.

3.2.3 Conclusion

To conclude, the following research gaps can be identified from the reviews of studies in sections 3.2.2.1 and 3.2.2.2.

- Studies in learners' spoken DM use conducted in EFL contexts have seldom examined learners' out-of-class (but within-the-EFL-context) L2 exposure and social interactions. In DM research, EFL contexts have mainly been equated with what happens inside the classroom.
- Longitudinal DM studies have been conducted in ESL or EMI but not EFL contexts.
- Longitudinal DM studies have not adopted a complex, longitudinal view of language development, i.e. they have not employed appropriate theory and methodology to describe and explain development over time.
- Few longitudinal DM studies have looked into contextual and individual factors and their interaction with DM use over time.

The present study aims to fill these gaps in order to, firstly, provide insight into a largely underexplored area, that of the development of EFL learners' spoken DM use, and, secondly, attempt to answer questions that are left unanswered, particularly regarding factors that are likely to influence EFL learners' DM development (or lack thereof). In

terms of the Greek EFL context, there is lack of evidence into Greek EFL learners' spoken DM use and development, except for Gilquin's (2016) study; however, given that Gilquin (2016) studied several learner populations, the Greek EFL context was not sufficiently or thoroughly addressed, hence the author's unexpected findings. The present researcher's familiarity with the context and the findings of her previous research have spurred a closer look to that learner population and context of DM use.

Moving from a focus on the overall context of DM use to the specifics of different contextual and individual factors, the following sections review studies on factors which have been, or could be, associated with learner DM use. Of those, factors which have previously been included in learner DM research are proficiency, formal instruction, age and gender. Factors that could be associated with DM use but have rarely been included in DM research despite their timeliness, are learner motivation and out-of-class L2 engagement within EFL contexts (i.e. Informal Second Language Learning, ISLL). Because the study hypothesises the importance of ISLL in EFL contexts, this factor is examined first.

3.3 Informal Second Language Learning

As discussed in the previous sections, unlike studies in ESL contexts, DM research in EFL contexts has largely neglected learners' self-initiated, out-of-class engagement with the language (i.e. their ISLL). There are two reasons why this factor merits investigation in the present study. Firstly, as already discussed, sustained L2 exposure and meaningful, real-life opportunities for language production are believed to encourage spoken DM use (Sankoff et al., 1997; Hellermann & Vergun, 2007). Although learners in the traditional EFL classroom are believed to have insufficient amount of language exposure and engagement, compared to learners in ESL contexts or in other contexts with increased L2 exposure, e.g. EMI (Martín-Laguna, 2019), little is known about learners' L2 engagement outside the EFL classroom, but within the EFL context, and its effect on their DM use. Secondly, there has been recent surge in ISLL studies, and growing evidence suggests benefits in various aspects of language learning and use. These studies have focused on lexicogrammatical proficiency (e.g. Peters, 2018) whereas the effect of ISLL on L2 pragmatics and, in particular, DM use in oral production, has been overlooked. The present section reviews previous literature on ISLL.

3.3.1 The various conceptualisations of ISLL

The past decade has seen renewed attention in the literature regarding EFL learners' out-of-class L2 engagement, particularly given the easy and rapid access to the Internet, the affordances of Web 2.0 tools and technological advances (e.g. smartphone applications), which have provided an abundance of avenues for engagement with English. Sockett and Toffoli (2020) acknowledge that naming and framing this emerging area of interest is a challenging endeavour given the various strands that have developed and the different conceptualisations. The principal component that seems to link most research in this area is a focus on EFL learners' exposure to and use of the language beyond the formal classroom and the teacher-driven tradition, and towards an informal and personal space (Sockett, 2014; Sundqvist, 2020). Only recently have different but related areas of research been brought together to comprise the innovative and emerging field of Informal Second Language Learning (ISLL, Arndt & Lyrigkou, 2019). The present study regards the various established concepts as sub-fields within the wider field of ISLL. These are presented below, with reference to the ways in which they overlap and differ.

Toffoli and Sockett (2010) coined the term Online Informal Learning of English (OILE). In OILE, L2 learning can emerge as a by-product of internet-based activities (e.g. listening to music online, social-networking, streaming TV, playing digital games). These activities are performed primarily for leisure, obtaining information, or communicating with L2 others; therefore, learning is "unofficial, unscheduled and impromptu" (Toffoli & Sockett: 2010:126). Research into OILE has underscored the role of affective parameters (i.e. high motivation and low anxiety associated with leisure), rather than teacher influence, in language acquisition (Sockett, 2014).

A somewhat similar concept is Lee and Dressman's (2018) Informal Digital Learning of English (IDLE), defined as "self-directed, informal digital English learning independent of formal contexts" (Lee and Dressman, 2018:435). The main similarities between IDLE and OILE are (a) the focus on digital resources for engaging with the language and (b) the learner-initiated and learner-controlled nature of L2 engagement that is independent of teacher guidance. However, an important difference between OILE and IDLE is that, unlike OILE, IDLE does not exclude intentional language learning activities; that is, activities performed with the primary intention to enhance one's language learning (e.g. watching pronunciation videos on YouTube, practicing grammar rules on Google, Lee &

Dressman, 2018). This is also reflected in Trinder's (2017:407) "dual purpose engagement", where learners were found to combine leisure-oriented and learning-oriented purposes when engaging with English informally. Although OILE acknowledges that learners might be aware of possible language learning benefits while immersed in an activity, the individual's primary intention when engaging with English informally is not to learn the language but to relax, entertain themselves, seek information or communicate with others (Kusyk, 2020).

Given the rapid advances in mobile technology, research has also examined informal learning through mobile devices, e.g. smartphones (Kukulska-Hulme, 2020). Among the characteristics of mobile devices that render them suitable for informal learning and distinguish them from other technologies such as desk-based computers are their portability, the numerous and diverse opportunities for anywhere-anytime L2 engagement, and the vast array of applications (apps) available, both language-learning oriented (e.g. Duolingo) and non-language learning oriented (e.g. Snapchat) (Kukulska-Hulme et al., 2017). A number of studies in Mobile Assisted Language Learning (MALL), or Informal Mobile Language Learning ("IMLL", Peng et al., 2021), have looked into learners' self-directed, personalised use of mobile technology beyond the language classroom with the main aim to enhance and extend one's language learning based on personal needs and interests (Kukulska-Hulme & de los Arcos, 2011; Jones, 2015; Kukulska-Hulme, 2016; Wrigglesworth & Harvor, 2018; Lai & Zheng, 2018; Peng et al., 2021). In an attempt to include leisure-oriented in addition to learning-oriented uses of smartphones, Jarvis and colleagues (Jarvis & Achilleos, 2013; Jarvis & Krashen, 2014) introduced the term Mobile Assisted Language Use (MALU). In MALU the L2-based activity can range from conscious language practice to "picking up" language through using it for social interactions and access to information (Jarvis & Achilleos, 2013:7).

Sundqvist (2009) and Sundqvist and Sylvén (2016) adopt the term "Extramural English" (EE). Similar to all aforementioned conceptualisations (e.g. OILE, IDLE, IMLL, MALU), EE takes place outside any structured educational programme, and similar to IDLE and MALU, EE corresponds both to activities in which the learner engages with the intention to learn the language as well as leisure-oriented activities. However, unlike all those other terms, EE is not limited to internet-based or technology-based activities but encompasses a variety of ways to engage with the language outside the class, both online and face-to-face (e.g. an L1 Greek learner of English talking in English to a British tourist who is on vacation on a Greek island).

Bringing together all the different conceptualisations, ISLL comprises research into learners' self-initiated, out-of-class L2 engagement which is not orchestrated or guided by the teacher or researcher. ISLL can include various activities, online or face-to-face (Sundqvist & Sylvén, 2016), ranging from those which are carried out primarily for leisure (i.e. leisure-oriented activities, Sockett, 2014) to activities with the intention to practise the language (i.e. learning-oriented activities, Lee & Dressman, 2018). Research which has examined learners' out-of-class participation in teacher or researcher-initiated projects (e.g. Scholz, 2017) are excluded from ISLL as it is conceptualised in this study. This is because such controlled, other-initiated out-of-class engagement occurs in settings imposed or modified by the teacher/researcher and can obscure factors (e.g. learner motivation) which might moderate the ISLL effect (Peng et al., 2021).

Because of the different purposes for engaging in self-initiated out-of-class L2 activities, a hotly contested issue in ISLL is the explicit-implicit debate, or, phrased differently, the intentional learning – incidental acquisition debate (Dressman, 2020). Informal learning, as conceptualised by Sockett and colleagues, is motivated by leisure and therefore any linguistic gains are "incidental" (Sockett, 2014:8). Drawing on Rieder (2003), Sockett (2014) posits that language gains that arise might not be the primary or conscious intention of the learner; attention is primarily paid to meaning rather than form (e.g. the plot of the TV show and not necessarily the grammatical structures used by the actors). Rieder (2003) distinguishes between two types of incidental (i.e. unintentional) learning processes: incidental implicit, which take place without the learner being conscious (i.e. aware) that learning is taking place, and incidental explicit, which, although unintentional, involve consciousness (i.e. awareness) of the process and product of learning.

Others have argued that in ISLL, the boundaries between intentionality and incidentalness are blurred (Dressman, 2020; Kukulska-Hulme & Lee, 2020). There can exist instances where the learner's focus might shift from being immersed in the activity to attention to a linguistic feature and intentional practice (Dressman, 2020); for example, an individual might attend to a certain lexical item in the subtitles while watching TV and subsequently process it by writing it down. The work by Vanderplank and Cole in particular (Vanderplank, 1990, 2016a; Cole, 2015; Cole & Vanderplank, 2016) has shown that explicit attention to linguistic details and active processing of language during ISLL (e.g. pausing, rewinding and looking up words when watching captioned TV) is critical in order for input to become intake. Given the blurred distinction between picking up language and

learning it intentionally, Hubbard (2020) views intentional learning and incidental acquisition during ISLL not as discrete categories, but as a continuum.

Turning from theory to empirical evidence, the following section summarises the main findings of ISLL research to date in order to identify main trends and research gaps which this study will address.

3.3.2 Summary of findings of ISLL research to date

Research in ISLL has mainly comprised two types of studies: (a) studies which have measured the amount, frequency, and diversity of learners' self-reported ISLL, sometimes also exploring learner attitudes and motivation for engaging in ISLL, and (b) studies which have measured language learning gains from self-reported ISLL. Studies have been carried out in EFL contexts of various L1 populations: Swedish (Sylvén & Sundqvist, 2012), Flemish (Peters, 2018), French and German (Kusyk, 2017), Austrian (Trinder, 2017), Slovenian (Jurkovič, 2019), Brazilian Portuguese (Cole & Vanderplank, 2016), Indonesian (Lamb & Arisandy, 2020) and Korean (Lee, 2019), among others. Participants' ages have ranged from young learners (e.g. ages 7-11 in Hannibal Jensen, 2019), to older adolescents (e.g. ages 15-16 in Sundqvist & Wikström, 2015), to university students (Kusyk, 2017).

Findings have shown that ISLL is widespread among speakers of various L1s and ages. Individuals have been found to frequently engage in various activities of a receptive nature (e.g. listening to songs, watching TV, reading online), whereas activities that involve language production and interaction with L2 others (e.g. written or spoken communication) are carried out less frequently (Kusyk, 2017; Trinder, 2017; Lai et al., 2018; Jurkovič, 2019).

Research that has measured language gains from ISLL has focused on lexical and grammatical acquisition, particularly vocabulary gains. Drawing on usage-based theories, which hold the frequency of input exposure and repeated language use as vital for language acquisition (Ellis, 2019), studies have demonstrated the importance of frequent engagement in certain out-of-class activities, particularly digital gaming (Sundqvist & Wikström, 2015; Sundqvist, 2019) and TV watching (Kusyk & Sockett, 2012; Sockett & Kusyk, 2015; Peters, 2018). For example, Kusyk and Sockett (2012) and Sockett and Kusyk (2015), in two studies of 45 and 22 French university students respectively,

provided evidence for receptive and productive vocabulary gains related to frequent TV-viewing: regular TV viewers (more than once per week) significantly outperformed occasional TV viewers in tests of comprehension and production of frequently occurring 4-word chunks (e.g. “was just trying to”) in popular TV series. Peters (2018) studied 79 Flemish secondary school and university students and found a positive relationship particularly between non-subtitled TV/film watching and receptive vocabulary knowledge.

At the same time, studies which have investigated a wider variety of ISLL activities as well as individual learner factors (e.g. motivation), have shown that frequency of engagement per se is not necessarily related to learning outcomes (Cole & Vanderplank, 2016; Lee, 2019; Kusyk, 2020). For example, Cole and Vanderplank (2016) showed that amount of time spent per week with informal sources did not contribute to language acquisition success. The researchers studied 34 fully autonomous self-instructed learners (FASILs) and 50 classroom-trained learners (CTLs) in Brazil. Both groups frequently engaged with informal sources; however, they differed in their mode of learning. For FASILs “their acquisition had begun as by-product of committed engagement with informal sources” (Cole & Vanderplank, 2016:34). FASILs focused actively and attentively on linguistic details during activities such as TV watching. CTLs also used informal sources frequently, but less actively and without the intention to benefit linguistically from them, as they mainly relied on formal instruction. Results revealed that FASILs outscored CTLs in seven tests of lexicogrammatical knowledge and production. Multiple regression analyses further showed that mode of learning (i.e. FASIL vs. CTL) was a very strong predictor of language gains whereas quantity of ISLL did not make a statistically significant contribution.

The majority of ISLL studies have been cross-sectional and correlational: researchers have collected data on learners’ self-reported ISLL and examined the association between activity engagement and language gains. A limitation of most of such studies is that because of their one-off data collection and correlational design, a cause-and-effect relationship cannot be established; it cannot be determined whether higher language gains are a product or rather a cause of increased ISLL, i.e. whether ISLL activities lead to language outcomes or whether it is the more proficient students who seek out opportunities for increased and varied ISLL.

A related limitation is that details on learners’ current or past formal learning experience (e.g. amount, type or content of formal instruction attended) are seldom provided in ISLL

studies, albeit with some exceptions (e.g. Peters, 2018). Many EFL learners can be regarded as more similar to Cole and Vanderplank's (2016) CTLs, given their participation in formal language education besides ISLL, and less similar to FASILs, whose acquisition was a product of their ISLL as they had attended only a trivial amount of formal education. Therefore, the possible influence of EFL learners' formal education needs to be investigated in order to draw more definite conclusions regarding whether language outcomes are indeed related to ISLL or are a carryover from formal language education. Examples of how formal education and ISLL are interconnected are given in the work of Chik (2014; 2018), where learners were found to transfer strategies learned at school to ISLL (e.g. writing down and looking up word meanings).

Besides learning strategies, there can also be carryover of knowledge from formal to informal settings (or vice versa); therefore, it is of interest to examine the effect of both ISLL and formal education on language gains in order to evaluate their contribution. Peters (2018) investigated the effect of ISLL (non-subtitled TV watching, Internet use, reading books and magazines) as well as length of formal instruction on the vocabulary knowledge of Flemish EFL learners who attended between 3 and 6 years of formal English instruction. The author found a positive relationship between each factor and learners' vocabulary knowledge. However, ANCOVA analyses revealed that the effect of ISLL on learners' vocabulary knowledge was larger than the effect of length of formal instruction attended; ISLL explained a higher percentage of the variance in the ANCOVA model than the length of formal instruction did.

The influence of different factors on language development and their inter-connectedness are central to CDST and can be examined through longitudinal study designs (Hiver & Al-Hoorie, 2020). However, a shortcoming of ISLL research is the paucity of longitudinal research. Sockett and Toffoli (2020:475) argue that "studying change over long time periods is at the heart of a complexity-theory approach to informal learning". Longitudinal ISLL studies situated within a CDST framework are therefore necessary in order to capture the complexity of learners' ever-changing ISLL, the way ISLL is interrelated with other individual factors (e.g. motivation) or contextual factors (e.g. formal instruction), as well as the influence of ISLL on learners' language development over time. Kusyk's studies (2017; 2020) belong to the few longitudinal ISLL studies situated within the CDST framework that measure language development over time. Kusyk (2020) assessed the relationship between the written language development and the ISLL habits of a French university student, data for which were collected iteratively several times over a 10-month

period. The results showed correlations between receptive activities and different measures of written development. For example, the more the participant watched films, the higher his lexical sophistication (i.e. use of low-frequency, advanced vocabulary words). The present study aims to build on Kusyk's small-scale investigation of learner development and examine whether and the extent to which ISLL influences DM development on a larger number of learners over time, following the CDST paradigm.

To summarise, the overall findings of ISLL research to date suggest that ISLL is widespread among EFL learners (particularly in the form of receptive activities). Frequency of engagement in certain activities (e.g. TV viewing) has been associated with certain language outcomes (particularly vocabulary knowledge and production); however, the effect of ISLL frequency per se can be non-significant when other individual and contextual factors are taken into consideration. In their majority, studies have been cross-sectional and correlational, while ISLL has mainly been examined in relation to lexicogrammatical gains and written complexity and accuracy. The following section argues for the relevance of ISLL to the study of learners' spoken DM use.

3.3.3 ISLL in L2 pragmatics research

As seen in 3.2.2.3, one of the gaps in cross-sectional research in learners' spoken DM use conducted in EFL contexts is that it has seldom examined learners' out-of-class (but within-the-EFL-context) L2 exposure and social interactions or, in other words, their ISLL. There has rarely been research bringing together the fields of ISLL and L2 pragmatics, with few exceptions (Vickov, 2015; Nightingale & Pla, 2018), which will be discussed later in this section. More importantly, to the best of this researcher's knowledge, there has been no research on ISLL and EFL learners' spoken DM use.

In general, recent L2 pragmatics research has constituted teacher-initiated projects in technology-mediated environments; that is, language-learning oriented interventions through computer mediated communication and mobile technologies, such as games (Holden & Sykes, 2013), telecollaboration projects (Cunningham, 2016) and apps (García-Gómez, 2020). The focus has shifted away from the traditional classroom, because of its poverty of pragmatic input and the artificial nature of interactions due to "the restricted and institutionalized roles of teacher and students" (González-Lloret, 2019:114). Technology-mediated environments can compensate for the perceived barriers of an older, pre-Web

2.0, traditional classroom and are believed to foster learners' pragmatic gains, as they enable access to authentic input and L2 others in the target language community (Taguchi, 2015a; Culpeper et al., 2018). Research has produced mixed findings: some studies have documented the effectiveness of tools to foster pragmatic comprehension or encourage pragmatic performance (e.g. Holden & Sykes, 2013), while others have revealed a lack of pragmatic gains over time (e.g. Sykes, 2013; Cunningham, 2016) and even the non-effectiveness of tools for pragmatic development (e.g. García-Gómez, 2020).

On the one hand, it can be argued that such projects can enable exposure to input and/or contact with L2 others especially for those students who might otherwise not have done so on their own for different reasons (e.g. lack of interest or knowledge of how to access different resources). On the other hand, in those projects, learners participate in spoken or written interactions where the topics of discussion or the interlocutors are predetermined by the teacher/researcher (e.g. Cunningham, 2016; García-Gómez, 2020). Or students play teacher-created digital games that simulate real-world experiences with the main purpose to practise L2 pragmatic features (e.g. Sykes, 2013; Taguchi et al., 2017). None of these necessarily portray real-life, personally meaningful settings, which scholars consider necessary for L2 pragmatic gains (e.g. Taguchi, 2015a). Such projects might lack the personal relevance found in learner-initiated out-of-class L2 exposure and interaction, in which the learner engages based on their own interests and needs (Sockett, 2014).

Several of those studies have indeed reported participants' suboptimal experiences. Participation in teacher-led projects has not always resonated well with all learners given that the context of interaction was considered unnatural (García-Gómez, 2020) or did not live up to all students' expectations (Holden & Sykes, 2013). It can be argued that even the self-directed use of learning-oriented websites to communicate with L2 others (e.g. Livemocha in Gonzales, 2013) is regarded as a less authentic endeavour given that language constitutes less of a tool to communicate and foster social relationships and more of a skill to be practised in the academic sense (Sockett, 2014). Because personally relevant interactions and exposure to real-life, meaningful input is believed to foster pragmatic gains (Taguchi, 2015a), it can be argued that lack of such characteristics might, in turn, hinder pragmatic outcomes.

Studies in L2 pragmatics that have looked into learners' self-initiated ISLL, and where the researcher's role was observational rather than interventional, are few and far between (Piirainen-Marsh & Tainio, 2014; Kim & Brown, 2014; Vickov, 2015; Nightingale & Pla,

2018). Piirainen-Marsh and Tainio (2014) and Kim and Brown (2014) tracked learners' pragmatic development while learners engaged in learner-chosen ISLL activities (digital gaming and computer mediated written communication, respectively), whereas Vickov (2015) and Nightingale and Pla (2018) looked into learners' self-reported ISLL and its effect on their pragmatic gains. The latter two studies are more relevant to the present study, which focuses on learners' self-reported engagement in various ISLL activities rather than observes learners while they're carrying out specific ISLL activities. Therefore, these studies are presented in detail below.

Overall, the evidence for the effect of ISLL in L2 pragmatics is inconclusive. Nightingale and Pla (2018) investigated 23 English philology university students in Spain, collecting data on their self-initiated, leisure-oriented TV watching and pragmatic awareness of speech act routines (i.e. understanding of requests, suggestions, complaints, refusals, apologies). L2 pragmatic data were gathered through multiple choice Discourse Completion Tests: participants were presented with different social situations and had to select the most socially appropriate language response from a series of responses. Students who reported not watching English TV had higher mean scores than students who watched, leading the authors to conclude that mere exposure to L2 input through TV watching is not sufficient to affect L2 pragmatic competence. However, they found some positive effects of regular TV watching and watching with subtitles for some types of speech acts (e.g. requests and complaints) in terms of pragmatic competence and pragmatic awareness. Nevertheless, the findings remain inconclusive because of the lack of statistically significant results and the small sample size.

Vickov's (2015) study is the most relevant in the literature because it brings together research on ISLL and DM use. Vickov (2015) investigated the DM frequency in the written productions of 200 EFL learners in primary and secondary schools in Croatia, and their out-of-school activities: surfing English websites, watching English TV, and reading English literature. Data on DM frequency were collected through a written test where learners wrote a formal letter to a magazine editor. Questionnaires were administered to gather information on students' ISLL. The findings report statistically significant positive correlations between written DM frequency and all three out-of-school activities for primary school students (and of lower proficiency), but correlations were non-significant for secondary school students (and of higher proficiency). Although the study is promising, the lack of convincing results for the whole sample renders the effect of ISLL on DM use inconclusive. Furthermore, there are some methodological limitations. Firstly, data were

collected only for activities which were of a receptive nature whereas the language examined involved production (i.e. written DM use). Secondly, there is a mismatch between the somewhat informal input learners might have come across during their ISLL activities and the formal writing task employed to collect DM data.

To summarise, there is only limited evidence regarding the effect of ISLL on aspects of L2 pragmatics, as mainstream L2 pragmatics research has focused on teacher-manipulated technology-enhanced environments. The small number of studies on L2 pragmatics and ISLL have only offered inadequate evidence, given the focus on a small number of selected out-of-class activities, while the results have not been statistically robust nor convincing for the whole sample (e.g. Vickov, 2015; Nigthingale & Pla, 2018). Furthermore, the effect of ISLL on spoken DM use remains an uncharted research area.

3.3.4 Presence of DMs in English media

Drawing from DM research into L1 English media discourse (e.g. films, TV, videos, social media, digital communication), it can be argued that DMs are likely to be present in the input to which L2 learners might be exposed during their ISLL. For example, scholars have documented the repetitive presence of DMs in TV and film dialogue, reporting similarities between scripted and spontaneous speech in terms of DM presence (Quaglio, 2009; Dose, 2013; Bednarek, 2018; Pettersson-Traba, 2018; Başol & Kartal, 2019). Quaglio (2009) found that DMs such as *I mean, kind of* and utterance final *so* appeared in high frequencies in the sitcom Friends. Dose (2013) showed that in some TV shows like Gilmore Girls *well* was as frequent as in an American English conversation corpus. *I mean* and *you know* were frequent in corpora of American soap operas, radio, and TV programmes in Pettersson-Traba's (2018) study, while Bednarek (2018) also documented the frequent presence of *well, like, I mean, you know* and other DMs in a corpus of sixty-six contemporary US TV shows. Bednarek (2018) mentions the desire of some showrunners to make TV dialogue sound as natural as unscripted conversation ("staged orality", Bednarek, 2018:125).

In ISLL literature, regular TV watching has been related to language gains (Sockett & Kusyk, 2015) and it might lead to picking up words and phrases that are frequent in the input (Vanderplank, 2019). Therefore, the same might be assumed for DMs. Vickov's (2015) finding that there was no effect of TV watching in the written DM use of her

secondary school participants could be due to the different modality and formality, i.e. spoken discourse in films vs. written discourse in Vickov's study. DMs in spoken discourse might be different from the DMs that Vickov's participants might have been expected to use in a written (and formal) letter to a magazine editor.

Learners might watch TV with or without subtitles or captions. Following Vanderplank (2020), the term "subtitles" refers to translated subtitles, while the term "captions" refers to same-language subtitles. Captioned TV has been found to benefit language gains by providing rich language input (Vanderplank, 2010, 2016b; Montero Perez et al., 2014). However, research has shown that DMs might be absent from captions and subtitles for several reasons. For example, in terms of subtitles, DMs have tended to be overlooked in film or video translation (Valdeón, 2008; Crible et al., 2019) for brevity purposes, as they are syntactically optional, or because their multifunctionality and little (or no) propositional meaning renders their translation difficult (Chaume, 2004; Aijmer, 2007; Cuenca, 2008). In terms of captions, some captioning guides do not prioritise DMs; it has been suggested that DMs, together with filled pauses (e.g. *ehm*, *hmm*) and false starts, can be edited out (e.g. Humber College, 2019:3), possibly due to space issues. In L2 DM literature regarding the effect of TV watching on DM use, Vickov (2015) did not examine the use of subtitles or captions in learners' self-reported TV watching. However, it is of interest to take type of input into consideration when examining participants' ISLL and its effect on DM use.

Research has also examined the presence of DMs in online videos (Tolson, 2010; Frobenius, 2014), such as TED talks (Uicheng & Crabtree, 2018). For example, Frobenius (2014) looked into the language use of vloggers, i.e. creators of online videos which are asynchronous audio-visual monologues of various content (e.g. lifestyle, travel, movie reviews), aimed at an audience and uploaded onto online platforms such as YouTube. Frobenius (2014) found that DMs are present in vloggers' discourse, accompanying shifts in ways of addressing the audience and involving them in the video. Examining the effect of online video watching on spoken DM use is relevant since it is a widespread ISLL activity among EFL learners (Sockett & Toffoli, 2020; Codreanu & Combe, 2020).

Studies have also researched DM use in digital written communication; that is, texting (i.e. exchange of text messages) or chatting (i.e. exchange of written messages online, such as through Facebook or WhatsApp). The work of Tagg (2012; Asprey & Tagg, 2019), for example, has shown that digital written communication often resembles spoken

production: individuals transfer speech-like features into digital written interactions as a way to promote a more informal and intimate atmosphere. One such feature in Tagg's research (2012; Asprey & Tagg, 2019) is spoken DMs (e.g. *anyway, you know, like*). ISLL literature has shown that informal, out-of-class activities involving language production (e.g. chatting) are less frequent than receptive activities among learners (Sockett, 2014). Nevertheless, there is the need to explore the effect of digital written communication on learners' spoken DM use, given that texting or chatting might promote not only exposure to but also production of DMs in written discourse, possibly influencing learners' spoken DM use.

There has also been research revealing DM presence in written media such as blogs (Lutzky & Gee, 2018) and social media posts (e.g. Twitter in Wikström, 2014). As ISLL studies have shown, such resources are often used by learners as out-of-class, informal reading material (e.g. Ewert, 2020). Although the effect of ISLL activities such as chatting or reading on spoken DM use merits investigation, it could be speculated that engagement with written input might not have an effect on spoken DM use; it might be that, as with Vickov's (2015) study where exposure to spoken input did not always transfer to increased written DM use, exposure to written input might not transfer to increased spoken DM use. This speculation is addressed in the present study.

To summarise, research into English discourse has reported the presence of DMs in mediated discourse (TV, films, videos, blogs) and written communication and has documented its frequency especially in oral input (such as TV). ISLL research has shown that EFL learners engage with various sources of English outside the class and of their own accord. The question therefore remains as to the effect of ISLL, involving those resources, on learners' spoken DM use. This is addressed in the present thesis.

3.3.5 Conclusion

Despite ISLL having evolved into a promising and productive field, the following research gaps can be summarised from the review of ISLL studies:

- Research on the relationship between ISLL and L2 pragmatic gains is scarce. ISLL literature has focused on lexicogrammatical gains or written accuracy and

complexity, and L2 pragmatics literature has mainly comprised teacher-initiated out-of-class projects.

- Despite DM presence in English language media, the question remains regarding the effect of ISLL through those resources on learners' spoken DM use.
- Most ISLL research is cross-sectional and correlational. There are few longitudinal ISLL studies that adopt the CDST framework and those have constituted individual case studies (Kusyk, 2017; 2020). More insight can be provided regarding the way a larger number of EFL learners who share the same learning context develop over time in terms of their ISLL and spoken pragmatic development.
- ISLL studies have rarely examined other individual and contextual factors (e.g. formal instruction, proficiency, motivation) in combination with ISLL and their influence on language development over time.

The present study addresses these gaps by bringing together the study of ISLL and learners' spoken DM use over time. Situating the enquiry in the Greek EFL context, the study aims to shed more light on whether and the extent to which ISLL has an effect on Greek learners' DM use, as the researcher's preliminary and small-scale findings suggest. Furthermore, data collection about Greek EFL learners' engagement with English needs to be more thorough than previously carried out in DM research (e.g. Gilquin, 2016); for example, data should be collected from the participants rather than be based on the researcher's assumptions about the status of English in the country. The following section examines the literature on another factor which could affect learners' spoken DM use, and which is also related to ISLL: learner motivation.

3.4 Motivation

An individual factor which could be related to learner DM use, but which has received little attention in DM research and the field of L2 pragmatics in general, is motivation. Motivation is considered indispensable to successful second language learning (Corder, 1967) and constitutes one of the most widely researched individual differences in SLA (Dörnyei & Ryan, 2015). Taguchi and Roever (2017) observe the scarcity of research on motivation in L2 pragmatics and that, in most studies, motivation has not been measured as a separate variable but has appeared as post-hoc interpretation of pragmatic gains, such as a possible reason why some participants had higher pragmatic gains than others (e.g.

Martín-Laguna & Alcón-Soler, 2018). Furthermore, not all L2 pragmatics research has utilised an established theoretical framework of motivation (e.g. Li, Raja and Sazalie, 2015; Takahashi, 2015) and, consequently, there is no clarity regarding the content of the different motivational constructs adopted in each study.

Notwithstanding these issues, there is evidence that suggests a link between motivation and L2 pragmatic comprehension and awareness (i.e. noticing pragmatic features in the input) (Takahashi, 2005, 2013, 2015; Li et al., 2015; Tagashira, Yamato, Isoda, 2011; Yamato, Tagashira, Isoda, 2013; Inagaki, 2019; Kitikanan, 2019). Highly motivated learners are more likely to pay attention to pragmalinguistic features in the L2 input than less motivated learners (e.g. Yamato et al., 2013; Takahashi, 2015). However, there is a dearth of research into the effect of motivation on L2 pragmatic performance; that is, the production, rather than mere noticing, of target items. A particularly neglected area in motivational pragmatics is DMs, with the exception of Ament's (2018) study which will be reviewed presently.

In a research agenda of possible future studies on motivation, Ushioda (2016) advocates for more research on motivation that focuses on specific pragmalinguistic features, for example DMs. Ushioda (2016) hypothesises that highly motivated learners who aspire to become fluent L2 speakers might be more aware of the range of DMs; that is, notice the different DM types used in L2 discourse. This statement appears to remain hypothetical, but extrapolating from findings in the existing literature on motivation and pragmatic awareness (e.g. Takahashi 2005, 2015; Li et al., 2015), the positive association between motivation and awareness of DMs seems likely. Ushioda's (2016) speculation could be extended to include the effect of motivation on actual production of DMs; that is, highly motivated learners might also be motivated to *produce* DMs. Responding to Ushioda's (2016) call and addressing the gap in the literature, the present study aims to investigate the role of motivation in L2 learners' DM use in spoken production.

The following section presents two influential motivational theories which have been dominant in SLA: the L2 Motivational Self-System (Dörnyei, 2005) and the Self-Determination Theory (Deci & Ryan, 1985). The constructs of each theoretical model are first outlined. Studies in general SLA and L2 pragmatics which have utilised the frameworks and which are considered relevant to the present study are then reviewed. It is finally argued that the combined study of both theories best suits the purposes of this research.

3.4.1 L2 Motivational Self-System (L2MSS)

Dörnyei's (2005) L2 Motivational Self-System (henceforth L2MSS) is influenced by motivational concepts in mainstream psychology: Markus and Nurius's (1986) "possible selves" and Higgins's (1987) "future self-guides" and his Self-Discrepancy Theory. The L2MSS is composed of the following three components: the Ideal L2 Self, the Ought-to L2 Self and the L2 Learning Experience. The Ideal L2 Self is the person a learner would like to become with regard to their L2 knowledge and/or use, whereas the Ought-to L2 Self is the person a learner feels obliged to become, in order to meet expectations imposed for example by a parent, a teacher or society in general. The L2 Learning Experience refers to motives which are specific to a learner's current process of learning and which exist in their immediate learning environment (e.g. the effect of the teacher or peers). Dörnyei's (2019:29) revised definition views the L2 Learning Experience as "the perceived quality of learners' engagement with various aspects of the language learning process".

The Ideal L2 Self and the Ought-to L2 Self components of the model are centred around a person's vision of themselves in the future (Future L2 Self). The focus on the future is related to the belief that a person's envisioning of their possible future self, rather than their current or past experiences, can result in motivated actions and behaviours (Dörnyei, 2009). In other words, by imagining or hoping for a possible future version of one's self, the individual can engage in goal setting, which in turn acts as a motive for their purposive actions at present (Dörnyei, 2009). Although the third component of the model, L2 Learning Experience, refers to the present, Dörnyei (2009) and Dörnyei and Ryan (2015) acknowledge that it differs from the Ideal L2 Self and the Ought-to L2 Self in its conceptualisation, as it does not refer to a type of self but is instead related to the current learning process and the learner's immediate context, such as factors that might influence behaviour at present (teachers, curriculum).

There have been calls in the recent literature in motivational SLA to refine the L2MSS by including a conceptualisation and operationalisation of a current L2 self-concept (Henry & Cliffordson, 2017; Al-Hoorie, 2018; Thorsen, Henry & Cliffordson, 2020; Smith et al., 2020). By including a "Current L2 Self", the model allows for the measurement of self-discrepancy (Higgins, 1987), which despite having informed the construction of L2MSS in the first place, had not been incorporated in the model (Mercer, 2011). Higgins's (1987)

Self-Discrepancy Theory postulates that motivating behaviour and actions are triggered by a person's desire to reduce the distance between their current state and their Ideal or Ought-to future self. If a future self-image is regarded as personally relevant and plausible but not easily attainable, then the discrepancy can be considered sufficient to lead to motivated behaviour with the aim of bridging the perceived gap (Higgins, 1987). If the Ideal or Ought-to future self are considered irrelevant or inaccessible to the individual, then there is believed to be much discrepancy which might not induce motivation, but trigger negative emotions, such as discomfort, frustration, even depression (Higgins, 1987).

The L2MSS is the dominant motivational framework in SLA (Boo, Dörnyei & Ryan, 2015). Of the studies in general SLA that utilise the L2MSS model, those which look into motivation and ISLL are particularly relevant to the present study (e.g. Henry & Cliffordson, 2017; Thorsen et al., 2020; Lamb & Arisandy, 2020; Lee & Lee, 2021). Research suggests that learners who are not limited to in-class learning and who frequently engage in ISLL might view their Current L2 Self as not so distant from an Ideal L2 Self (Henry & Cliffordson, 2017; Thorsen et al., 2020). Because individuals are already users of the language, becoming a competent L2 user is not viewed as a distant future reality; therefore, there is little, rather than much, present-future self-discrepancy. Some scholars suggest that little present-future self-discrepancy might not spur motivated behaviour and therefore can have a negative impact on effort expended inside the school (Henry & Cliffordson, 2017; Thorsen et al., 2020). However, not all studies support this (Smith et al., 2020). Although recent studies have incorporated the concepts of Current L2 Self and present-future self-discrepancy, they have related these concepts to effort expenditure but not language use. Therefore, little is known as to how researching learners' Current L2 Self and present-future self-discrepancy can inform about their language choices and development.

A related notion is the "authenticity gap" (Henry, 2013; Lamb & Arisandy, 2020). Learners who engage frequently in ISLL might perceive the in-class learning context as inauthentic, monotonous, and uninspiring; therefore, there is an "authenticity gap" between learning in formal instructional settings and engaging in personalised, out-of-class L2 activities (Henry, 2013; Lamb & Arisandy, 2020; Henry & Lamb, 2020). Learning in the EFL classroom can be perceived as traditional, outdated and exam-centred, while engaging in ISLL can be regarded as more personally meaningful, relevant to the individual's interests, needs and aspirations (Lamb and Arisandy, 2020). Henry (2013) posits that

perceptions of an authenticity gap might negatively influence a learner's commitment to learning in the formal educational context. Graham et al. (2016) provided evidence that even for learners of languages other than English (i.e. French), learners' needs might be in conflict with the perceived characteristics of formal instruction. Whereas secondary-school learners of French in the UK were motivated by a desire to travel abroad and communicate with French speakers, they reported low confidence in using conversational language and engaging in conversation with French speakers in the future. The authors suggested that learners might have felt unequipped to do so due to the perceived nature and content of French lessons. The authors did not study learners' ISLL. However, the presence of "disjuncture" (2016:699), which appears to be an issue not only for EFL learners, but also of learners of other languages, calls for further examination of learners' motivation, perceptions of formal instruction and ISLL experiences, as these issues seem interconnected and likely to influence language use.

Other studies suggest that despite their frequent out-of-class engagement, some EFL learners might not recognise (or at least not report) an authenticity gap (Lamb & Arisandy, 2020), whereas for students who do perceive and report an authenticity gap, this might not result in reduced effort investment inside the class but rather induce motivation to invest more effort: "formal studying may be seen as a way to improve English, allowing further enjoyment of authentic activities" (Smith et al., 2020:14). Despite links to effort investment and confidence, the effect of perceptions of an authenticity gap on language use is not yet clear. This will be addressed in this study.

Examining learners' L2MSS along with their Current L2 Self, their present-future self-discrepancy and perceptions of an authenticity gap is relevant to the present study, as it could shed light on learner DM use. For example, a student who employs a limited range of DMs in their spoken discourse might be someone who, although wishing to speak fluently in the future (Future L2 Self), does not engage in L2 speaking presently or is negatively disposed towards speaking (Current L2 Self). This large present-future self-discrepancy might not motivate the student to speak (and use DMs); consequently, the learner might not seek opportunities for L2 speaking outside the class. Conversely, a student who employs a wide range of DMs in their discourse might be someone who not only aspires to become a fluent L2 speaker in the future (Future L2 Self) but also speaks at present in meaningful, out-of-class encounters with L2 others (Current L2 Self). The little (rather than large) present-future self-discrepancy might motivate the student to seek more opportunities to speak in English (which might reinforce their DM use). The extent to

which different degrees of present-future self-discrepancy (i.e. little, much) and a perceived authenticity gap might influence a learner's motivation to speak and employ DMs in their discourse is yet to be examined.

Only recent motivational studies in L2 pragmatics have utilised the L2MSS (e.g. Inagaki, 2019; Kitikanan, 2019). Ament's (2018) study appears to be the only piece of research where the model has been utilised in the study of L2 DM use in spoken production and where motivation has been treated as a variable under scrutiny and measured based on a prevailing theory.

Ament (2018) examined the motivation and spoken DM use of 46 full-EMI and 50 semi-EMI university students in Spain. Data on the frequency of participants' textual and interpersonal DMs were collected through a monologue and an interactive task, while questionnaires with 5-point Likert scale items were administered to gather data on students' Ideal L2 Self, Ought-to L2 Self, and L2 Learning Experience. The results revealed that the Ought-to L2 Self correlated positively with overall DM frequency, interpersonal DM frequency, and textual DM frequency, whereas correlations with the other L2MSS components were non-significant. According to Ament (2018), the positive role of the Ought-to L2 Self (rather than, for example, the Ideal L2 Self) is linked to societal demands which might have constituted an important influence on EMI university students. Ament's (2018) study did not take into consideration the concepts of Current L2 Self or present-future self-discrepancy, which would have been in line with the recent re-conceptualisation of the L2MSS (Al-Hoorie, 2018), enabling a more thorough understanding of learners' motivation. Nevertheless, the study provided promising evidence regarding the effect of motivation on spoken DM use. Undoubtedly, there is need for a more in-depth exploration of DM users' views about their L2 selves and learning experience that goes beyond agreeing or disagreeing with questionnaire items. It is also particularly important to track motivation over time, as it is a dynamic concept and subject to change, rather than a fixed trait (Lamb, 2018; Consoli, 2021).

3.4.2 Self-Determination Theory (SDT)

Another influential theoretical framework regarding the construct of motivation is Deci and Ryan's (1985) Self Determination Theory (henceforth SDT). According to Ryan and Deci (2000), motivated behaviour can be viewed as intrinsic or extrinsic. Individuals with

intrinsic motivation perform tasks because of the sheer enjoyment of the task itself, while extrinsic motivation is identified by the achievement of a separable desired result. As Ryan and Deci (2000) posit and as Figure 3.1 shows, extrinsic and intrinsic motivation can be viewed on a continuum of various sub-types of regulation, based on the degree to which they are imposed by external sources (i.e. are externally regulated) or stem from the self (i.e. are internally regulated).

Behaviour	Nonself-determined					Self-determined
Types of motivation	Amotivation	Extrinsic				Intrinsic
Sub-types of regulation	Non-regulation	External	Introjected	Identified	Integrated	Internal

Figure 3.1 The SDT continuum (based on Ryan & Deci, 2000).

As shown in Figure 3.1, at the far-left side of the continuum is amotivation, a lack of willingness to perform an act, while at the far-right side resides intrinsic internal motivation, the most internalised motivation, whereby individuals perform an activity because of feelings of satisfaction and pleasure that are associated with that particular activity. With regard to language learning, Noels et al. (2000) distinguish three different types of intrinsic internal motivation, namely, intrinsic-knowledge, intrinsic-accomplishment and intrinsic–stimulation. Individuals can engage in language learning because of the enjoyment associated with finding out about new things (intrinsic-knowledge), such as knowing about the L2 culture, or because of the satisfaction they feel when they accomplish difficult tasks in the L2 (intrinsic-accomplishment), such as understanding a difficult construct. The third internal intrinsic reason for L2 learning is associated with an arousing interest in the language itself (intrinsic–stimulation), such as the way it sounds, or enjoying the experience of speaking it (Noels et al., 2000).

Along the continuum, between the two ends of amotivation and intrinsic internal motivation, lie four classifications of extrinsic motivation, whereby an activity is practised for instrumental reasons that are more or less self-determined. Individuals with the first type of extrinsic motivation, namely extrinsic external motivation, perform activities not for personal reasons, but because of demands, rewards, or values imposed by external sources. This is the least self-determined sub-type of extrinsic motivation. For example, students engage in L2 learning because they feel they need to pass an exam or because

they think it is expected from them by their parents, teachers, or the society in general. The second type is extrinsic introjected motivation, namely doing an activity because of one's internal pressures, such as the need to satisfy their self-esteem, feel superior to others or avoid negative emotions such as shame for not meeting externally imposed standards. For example, extrinsic introjected motivation in L2 learners can be reflected in their learning of a language in order to avoid distress for not meeting the standards of today's globalised society (e.g. finding work).

A more internalised form of extrinsic motivation is extrinsic identified motivation, which characterises engagement in certain activities because they are personally valued by the individual. For instance, a student might learn an L2 because of their personal desire to be able to communicate with L2 speakers, an end which is meaningful to the student rather than constituting an obligation. Finally, the most self-determined and internal form of extrinsic motivation is extrinsic integrated motivation. Individuals with this type of motivation perform tasks because the task forms part of their identity. For example, a student learns an L2 because this enables them to express their sense of self. It can be concluded that for the less self-determined types of extrinsic motivation (extrinsic external and extrinsic introjected), there is a sense of obligation in doing an activity, while for the more self-determined and internalised types of extrinsic motivation (extrinsic identified and extrinsic integrated) the act is performed with volition (Noels et al., 2016).

Studies in general SLA have found that more self-determined motivation (i.e. extrinsic identified, extrinsic integrated, intrinsic) is associated with language achievement and self-confidence, whereas amotivation and less self-determined motivation (i.e. extrinsic external, extrinsic introjected) are linked to anxiety and lack of engagement in learning (Noels et al, 2016). Similarly, studies in ISLL have drawn links between ISLL and more self-determined motivation (Cole & Vanderplank, 2016; Sundqvist & Sylvén, 2016; Kusyk, 2020). Perhaps the most revealing piece of ISLL research that has utilised the SDT framework is Cole's study of FASILs and CTLs (Cole, 2015; Cole & Vanderplank, 2016, also reviewed in Section 3.3.2). Analysis of motivational profiles showed that FASILs' achievement and outperformance of CTLs was linked to their extrinsic identified motivation (i.e. a more self-determined type of extrinsic motivation). FASILs, unlike CTLs, viewed English as a functional tool that enabled them access to activities which they highly valued and which were relevant to their everyday lives.

Other ISLL studies have underscored the importance of intrinsic motivation. Research has shown that engagement in ISLL because of an enjoyment in the activity itself (e.g. video watching, digital games) can encourage active engagement with the language and can be related to language gains (Kusyk, 2020). Although there have not been studies tracking changes in ISLL and learner motivation, it can be expected that sustained and frequent ISLL might be related to sustained highly internalised motivation. Particularly interesting are findings which reveal the opposite; that is, an association between a decrease in learners' intrinsic motives for L2 learning over time and aspects of formal instruction, such as negative in-class experience due to the unengaging content of in-class language tasks (Lamb, 2007; Busse & Walter, 2013).

Turning to L2 pragmatics, the incorporation of SDT in research has been limited. However, research has made links between pragmatic awareness and intrinsic motivation or more internalised types of extrinsic motivation (i.e. extrinsic identified or extrinsic integrated) (Tagashira et al., 2011; Yamato et al., 2013). For example, Tagashira et al. (2011) found that when presented with input that contained pragmatically inappropriate utterances, Japanese university EFL learners with more self-determined motivation were more inclined to analyse the input and detect the pragmatic errors than learners with less self-determined motivation, i.e. extrinsic external motivation. With regard to DM use, it could be hypothesised that the more self-determined learners or those who have a bigger inherent interest in the language itself might not only be more inclined to notice pragmatic features, such as DMs, but also incorporate them in their L2 production. The present study aims to explore this speculation further. Whether and the extent to which changes in motivation are related to changes in DM use are also of interest given the present study's adoption of CDST.

3.4.3 Combination of L2MSS and SDT

The present study argues that an analysis combining L2MSS and SDT is suitable for examining the relationship between motivation and L2 DM use. The endeavour to combine the two theories is mainly supported by the fact that proponents of L2MSS and SDT recognise a conceptual overlap between the two frameworks (Dörnyei, 2009; Noels, 2009; McEown et al., 2014). According to Dörnyei (2009), less internalised extrinsic motivation (i.e. extrinsic external and extrinsic introjected in SDT) is a close match to an Ought-to L2

Self (L2MSS), while more internalised extrinsic motivation (i.e. extrinsic identified and extrinsic integrated in SDT) is closely aligned with the Ideal L2 Self (L2MSS).

Although the Future L2 Self (Ideal and Ought-to) has different degrees of internalisation (more extrinsic, i.e. Ought-to L2 Self, to less extrinsic, i.e. Ideal L2 Self), the Current L2 Self, which has recently been incorporated into the framework (Thorsen et al., 2020), is under-theorised. It can be argued that the Current L2 Self can have different degrees of internalisation based on the different SDT sub-types. For example, a student might engage in learning because of enjoyment of the language (intrinsic internal motivation). Or the learner might have functional motives. For instance, they might associate learning English with personally valued activities at present (extrinsic identified motivation) or with an obligation which they consider externally imposed, such as present societal demands (extrinsic external motivation). Before the incorporation of a Current L2 Self, Dörnyei (2009) had posited that the present component of L2MSS (i.e. L2 Learning Experience) was a close match to intrinsic motivation (SDT). As seen from the above examples, it can be argued that the present component of L2MSS can be linked to all SDT sub-types and not only to intrinsic motivation, as Dörnyei (2009) suggests. Furthermore, given that the quality of an individual's engagement in their current learning process (i.e. L2 Learning Experience) can shape how one views their L2 self at present (i.e. Current L2 Self), the two concepts, L2 Learning Experience and Current L2 Self, can be considered related.

A second reason why the present study argues that it is preferable to adopt both the L2MSS and SDT, rather than focus on one of the two, is because the two frameworks appear to be complementary. On the one hand, the L2MSS includes a future component which the SDT lacks. The Future L2 Self is considered a relevant concept to the study of DMs. Following on from Ushioda's (2016) speculation, an individual whose Ideal Future L2 Self is a fluent L2 speaker might be more inclined to use DMs in their spoken production. Moreover, the combination of the present and future components of the L2MSS enables the study of present-future self-discrepancy. As has been advocated (Henry & Cliffordson, 2017; Thorsen et al., 2020), measuring the extent of self-discrepancy can provide insight into the extent of effort exerted in learning, which, in turn, could explain differences in the DM use between learners. On the other hand, the SDT includes different degrees of internalisation which are missing from the L2MSS, particularly from the concept of a Current L2 Self. Therefore, SDT enables a more in-depth understanding of different types of motivational orientations (Lou & Noels, 2018). This can be useful not only for projecting different types of Current and Future L2 selves

but also understanding which type of motivation or degree of self-determination is associated with broader or more limited DM use.

Al-Hoorie (2018) calls attention to a recently observed practice of theorists who, in their attempt to address possible limitations of the L2MSS, borrow concepts from SDT and incorporate them into L2MSS under different terminology. The present study avoids the caveats that come with formulating constructs which are "self-determination theory cast in self terminology" (Al-Hoorie, 2018:28). By attempting the combined study of L2MSS and SDT, the different constructs of each theory are treated as products of the respective theory. The operationalisation of the combination of the two frameworks for the purposes of the present study is detailed in Chapter 4 Methodology, Section 4.6.3.2.

3.4.4 Conclusion

To conclude, the following research gaps can be identified from the review of studies in L2 motivation:

- There is limited research on the factor of motivation in L2 pragmatics with few studies having adopted an established theoretical framework of motivation, such as L2MSS or SDT.
- There is a scarcity of research on motivation and L2 spoken DM use with the exception of Ament (2018).
- Tracking motivation over time has not been the focus of DM or ISLL research. However, drawing on CDST, both ISLL and motivation are subject to change and their interrelationship might influence DM development.

The present study aims to address these gaps by bringing together two influential motivational theories, the L2MSS and SDT, in the study of learners' spoken DM use. The combination of both theories in studying learner motivation is believed to provide a more comprehensive and complete understanding of motives related to learners' spoken DM use. The following section reviews research on other factors which have been found to influence learners' spoken DM use: proficiency, formal instruction, age and gender. These factors are included in this research in order to assess their influence in DM use alongside ISLL and motivation. These factors are reviewed briefly, given this study's main focus on

ISLL and motivation and the hypothesis that ISLL and motivation might play a more important role on learners' frequent and broad DM use.

3.5 Other factors related to DM use

3.5.1 Proficiency

L2 proficiency has been defined as the combination of knowledge of organising utterances (lexical-grammatical knowledge) and knowledge of using them in an appropriate manner (pragmatic knowledge) (Bachman & Palmer, 2010). DM research that has looked into this factor suggests that aspects of DM use rise with proficiency. For example, it has been found that the spoken discourse of more proficient learners of English displays higher DM frequency and wider DM range than the discourse of less proficient learners (Hellermann & Vergun, 2007; Wei, 2011; Neary-Sundquist, 2014; Ament et al., 2018). At the same time, research suggests that even though increased DM use might not always lead to a student being regarded as more proficient, higher proficiency can be accompanied by higher DM frequency (Beeching, 2015). In terms of types of DM functions employed, some studies have reported that more advanced learners use a higher frequency and wider range of both textual and interpersonal markers (Wei, 2011). However, others have found no relationship between L2 proficiency and interpersonal DM frequency (Ament et al., 2018), suggesting that more research is required to determine whether and how proficiency influences DM use.

Certain limitations must be raised regarding both the way most studies have measured proficiency as well as the analysis of differences in proficiency between various groups. Firstly, L2 proficiency has not always been measured objectively or thoroughly (i.e. through assessment). In some studies, participants were asked to self-assess their skills (Diskin, 2017), while in others, proficiency level was either assumed from the number of years that participants had been learning the language (Liao, 2009) or was left to the researcher's judgment (Polat, 2011). Some studies that administered proficiency tests, measured general English proficiency (online Cambridge placement test in Ament & Barón Parés, 2018; tests of vocabulary knowledge in Jakupčević, 2019), rather than assessing oral proficiency in particular. Measuring oral rather than general proficiency would have been more relevant given that DM use was examined in spoken discourse.

More importantly, in studies where learners were assigned to various proficiency levels with the aim to compare their DM use, assignment to different levels was subjective and there was no analysis carried out to ascertain that the resulting levels significantly differed from one another in terms of proficiency. For example, in Wei's (2011) study, raters assigned participants to one of two proficiency levels (intermediate vs. advanced). Oral proficiency was assessed based on guidelines of general characteristics expected from students' spoken performance at each level rather than based on scores. Because of this subjective and non-numerical assessment, it is not possible to measure whether the two generated groups significantly differed from one another in their proficiency. Similarly, Neary-Sundquist (2014) assigned participants to four different proficiency groups from less to more proficient based on their scores in an oral test. However, there is no evidence provided regarding the extent to which the four generated groups differed in their proficiency, i.e. whether students at the lowest level were significantly less proficient than students at the subsequent higher level, and so on. Both Wei (2011) and Neary-Sundquist (2014) suggested that DM use rises with proficiency. However, because of these methodological caveats, claims regarding a positive relationship between proficiency and DM use should be treated with caution.

Studies have questioned the extent to which high proficiency is the main or only contributor to L2 pragmatic gains (Roever et al., 2014). Studies in L2 pragmatics that have aimed to disentangle the effect of L2 proficiency from L2 exposure have argued that naturalistic L2 exposure and/or interactions with L2 others might be equally or more influential to learners' pragmatic comprehension and/or performance than L2 proficiency (Matsumura, 2003; Bardovi-Harlig & Bastos, 2011). This reflects findings in DM research. Some studies have suggested that exposure to L2 input might play an equally or more decisive role than L2 proficiency in frequent and/or broad DM use (Diskin, 2017; Ament et al., 2018; Jakupčević, 2019). For example, Ament et al. (2018) suggested that alongside proficiency, intensity of L2 exposure through EMI university programmes (attendance of full-EMI vs. semi-EMI) was crucial to frequent and broad DM use. Diskin (2017) found that Chinese and Polish migrants who resided in Ireland between 1 and 11 years employed *like* in a similar frequency to NSs after three years of residence. Diskin (2017) found that length of residence was more significant a factor than language proficiency for employing *like* frequently. Because most studies have examined L2 exposure in contexts with increased L2 exposure (ESL, EMI), the question remains as to whether L2 exposure in EFL contexts (rather than ESL or EMI) might be a more important factor than L2 proficiency.

It is important to understand why, especially in the case of DMs and more than other pragmatic features, frequent and broad use might not always be an indicator of high oral proficiency. Research has shown that among their various functions, DMs can signal hesitation. Moments of production trouble while planning an upcoming utterance or a decision to correct a previous utterance are common in spoken discourse (Crible & Pascual, 2019). Therefore, DMs can appear alongside disfluency phenomena, such as repetitions, truncations, self-repairs, pauses and reformulation of errors (Crible, 2017b; Buysse, 2019; Crible & Pascual, 2019). Although disfluency is an inherent and natural characteristic of human communication, it is likely to be stigmatised more in learner than L1 speech (Gilquin, 2008). As a result, when DM use occurs alongside disfluency, it might have a negative effect on a speaker's perceived oral proficiency level. Because increased DM use might not always be an indicator of high proficiency, proficiency could be a less determining factor than ISLL or motivation for increased DM use, as the present study hypothesises. The effect of L2 proficiency on learners' spoken DM use over time and the extent to which proficiency is a more or less influential factor in EFL learners' DM use is yet to be examined and will be addressed in the present study.

3.5.2 Formal instruction

The factor of formal instruction has also been taken into consideration in DM research. As already discussed in Section 3.2.2.1, scholars have observed that explicit instruction of DMs is often absent from the curriculum (Liao, 2009; Okati & Ghasedi, 2017). Although scholars have theoretically proposed the potential benefits of formal instruction of DMs (Polat, 2011; McCarthy & McCarten, 2018), studies have empirically documented attrition of DMs learnt through formal instruction over time (Jones & Carter, 2014). Classrooms have also been regarded as a less optimal context for DM acquisition due to the artificial nature of classroom input and interaction (Romero-Trillo, 2020).

As seen in the review of cross-sectional DM studies (Section 3.2.2.1), researchers have criticised the limitations of teacher talk and content of textbooks; there is overrepresentation of certain markers (e.g. *well*) and underrepresentation of others (e.g. *like*, *I mean*), possibly due to the perceived informality and colloquial nature of the latter. As a result, EFL learners' exposure to teacher talk and textbook content is believed to drive learners to overuse certain DMs (e.g. *well* in Müller, 2005; Gilquin, 2016) and

underuse others (e.g. *you know* in Buysse, 2017). Romero-Trillo (2012:4526) argues that learner DM use is often characterised by "overabundance in quantity but [...] reduced diversity" particularly owing to the limits of formal education. In terms of DM functions, learners have been found to overuse textual markers compared to interpersonal markers (Fung & Carter, 2007; Buysse, 2015; Jakupčević, 2019; Ament et al., 2019), which has also been linked to influence from formal settings. For example, Ament et al. (2018) suggested that their EMI participants overused textual markers possibly because they were frequent in participants' input, given the functions that textual markers can index in academic lectures: shifting topics, marking openings, and emphasising, among others.

Ament et al.'s (2018) study is an exception to the overall negative association between formal instruction and DM acquisition. In their study (also reviewed in Section 3.2.2.2), exposure to input in formal contexts was positively associated with DM acquisition: full-EMI students outperformed semi-EMI students in overall DM frequency, DM range and frequency of textual functions. Moreover, students with longer participation in EMI settings (3 years) outperformed those with more limited amount of exposure (2 years). The authors argued that length and intensity of EMI education had positive effects on learners' spoken DM use. However, EMI contexts are qualitatively different from the typical EFL classroom due to increased opportunities for exposure to and use of the L2 in the EMI classroom compared to the EFL classroom. Therefore, it remains to be examined whether length of EFL instruction is associated with DM use. However, it is hypothesised ISLL will be a more determining factor.

Although research has investigated (or theoretically suggested) the effect of formal education in learner DM use, studies have focused on either teachers or textbooks and have seldom provided empirical evidence on the DM use of all three agents in the classroom, i.e. learners, teachers and textbooks. For example, Müller (2005) analysed learner DM use and DM presence in textbooks, Hellermann and Vergun (2007) examined learner and teacher discourse, Vickov and Jakupčević (2020) looked into teacher DM use, and Gregori Signes et al. (2016) analysed the DM content of textbooks. The present study will look into all three agents in order to offer a more complete understanding of DM use in the EFL context as well as identify the extent of the effect of formal instruction on learner DM use.

3.5.3 Age and gender

The effect of age and gender on spoken DM use has been studied more extensively in L1 than learner discourse. Findings have shown that younger NSs employ more DMs in their discourse than older NSs (Nestor et al., 2012; Laserna et al., 2014). There are no studies suggesting that younger L2 learners employ more DMs than older learners. Furthermore, most research in learners' spoken DM use has focused on adult L2 learners (e.g. Beeching, 2015; Buysse, 2017; Ament et al., 2018), but research on the adolescent age group has been limited (e.g. Lin, 2016). From a CDST viewpoint, adolescent learners are of particular interest. As Taylor and Busse (2016) argue, adolescence is a key period given that various factors come into play and can influence L2 development. Most learners usually receive the largest amount of formal instruction at that age (Taylor and Busse, 2016). Furthermore, adolescents gradually start developing their own interests, views, and sense of identity, while at the same time their ISLL habits, their motivation and sense of self can be influenced by parents, teachers and peers (Lamb, 2012; Lasagabaster, 2015; Rothoni, 2018). As can be seen, multiple factors, including formal instruction, ISLL and motivation, co-exist dynamically, particularly at that crucial age. Therefore, this study focuses on adolescent learners, as interesting findings may be revealed regarding whether and which factors might influence those learners' spoken DM use the most.

In terms of gender, research has documented a tendency for NS female speakers to use DMs more frequently than NS male speakers (Schleef, 2005; Tagliamonte, 2005; Laserna et al., 2014). There have also been L2 studies (e.g. Liao, 2009; Bu, 2013; Tavakoli & Karimnia, 2017) reporting that female learners employed DMs with higher frequency than male learners. The present study takes into consideration both age and gender in order to control for their effect, given their potential relevance in learner DM use.

3.5.4 Conclusion

To summarise, the factors of L2 proficiency, formal instruction, age, and gender have been examined in relation to DM use, but there is no clear evidence regarding whether and the extent to which each of those factors contributes to higher DM frequency and broader DM range. Issues such as methodological limitations in the measurement of proficiency, partial examination of aspects of formal instruction and lack of or mixed findings regarding age and gender highlight the need for more research. This study takes these issues into

consideration and includes those factors in the longitudinal examination of learners' spoken DM use.

3.6 Research questions

The hypothesis presented at the beginning of the literature review, and which guided the identification of the different domains of investigation in previous literature was the following:

> Frequent and broad spoken use of DMs by EFL learners in oral activities over time would be more likely to be associated with learners' engagement with English in their free time outside the class and their motivation to learn and speak in English and less likely with other factors, such as their spoken proficiency and aspects of formal instruction attended.

The literature review informed the hypothesis. More specifically, previous evidence has revealed that ISLL and motivation have not been considered in terms of spoken DM use in EFL contexts, despite the potential to influence spoken DM use positively, whereas evidence for the effect of other factors (spoken proficiency, formal instruction, age, gender) remains tentative. This study aims to bring all these factors together, filling the gaps identified in the literature in order to provide a clearer understanding of EFL learners' spoken DM use.

The overall gaps are summarised below, followed by more specific points that lead to the study's RQs.

- The EFL context has been conceptualised in a limited way in L2 pragmatics and DM research because it has been equated with the EFL classroom. Factors which could be associated with frequent and broad DM use, such as ISLL and motivation, are still on the fringes of DM research, despite growing evidence in other SLA sub-fields that highlights their importance in language acquisition. Other factors such as proficiency, formal instruction, age, and gender have been shown to influence DM use; however, there is no clear evidence that they are associated with frequent and broad DM use.

- Language acquisition is a dynamic process influenced by individual and contextual factors. However, there is an overall lack of longitudinal research adopting the CDST framework and examining the interaction of various contextual and individual factors in spoken pragmatic language development and, in particular, DM use.

More specifically, DMs have been studied mainly in contexts of increased exposure to and use of the target language, i.e. ESL and EMI contexts, with fewer studies carried out in EFL contexts. Furthermore, the adolescent age group has received little attention in L2 DM research. However, the characteristics of adolescence (increased formal instruction, sensitivity to pressures and influence from others, emerging identity and autonomy, broader use of new media) render this age group suitable and particularly interesting for the examination of language development as influenced dynamically by the factors under scrutiny. Finally, to date, there has been limited research on the DM use of Greek EFL learners (with the exception of Gilquin, 2016). These points lead to this study's first RQ.

> **RQ1**: What are the characteristics of DM use in Greek adolescent EFL learners' spoken discourse with regard to the following markers: *so, well, just, like, I don't know, actually/in fact, you know, I mean, sort of/kind of,* and the category of general extenders?

The complete rationale for including these specific DM types is provided in Chapter 4, Section 4.6.1.2.

Contrary to most studies (e.g. Ament et al., 2018; Buysse, 2019), this study does not compare L2 DM use with NS DM use. Although NS comparisons are considered informative in that they shed light on the extent to which learners acquire and use DMs, such research and the assumption that NSs are a suitable comparison for learners have their limitations (as seen in Section 3.2.2). The aim here is to examine DM use within the learner group and make between-learner comparisons in order to subsequently understand why students might differ in their DM use. It is hypothesised that fewer Greek adolescent EFL learners will employ a larger number and wider range of DMs whereas most learners will employ a smaller number and narrower range of DMs, reflecting the results of

previous literature of learners of various L1s, contexts and ages (e.g. Fung & Carter, 2007; Gilquin, 2016).

Because EFL learners' use of L2 pragmatics has mainly been studied in relation to the classroom, EFL contexts have been criticised for the poverty of input and lack of real-life, meaningful interactions to encourage exposure to and use of pragmatic structures, i.e. DMs. Usage-based theories of language acquisition posit that increased input exposure and repeated language use are necessary so that learning processes are triggered (e.g. noticing and processing of the input) which can encourage L2 acquisition (Ellis, 2019). Criticism has focused on either teachers or textbooks but seldom have all three agents of formal instruction (learners, teachers, and textbooks) been addressed simultaneously in order to paint a more complete picture of DM use in the EFL context. The following RQ, which is a sub-question of RQ1 because it contributes to our understanding of the nature of Greek learners' DM use inside the EFL learning context, addresses this issue:

> **RQ1a**: How is the learners' DM use similar to or different from DM use in their teachers' discourse and the DM content of instructional material with regard to the markers under examination?

It is hypothesised that restricted learner DM use will reflect the limits of both teacher DM use and DM content of instructional material.

Drawing on CDST which views language acquisition as a dynamic process, tracking language use over time is more informative than a reductionist snapshot of language use at one time-point (Schulze, 2017). Whereas studies have traced learner DM use in ESL contexts (e.g. Tavakoli, 2018; Magliacane & Howard, 2019), DM development in the EFL context remains underexplored. This leads to the second RQ:

> **RQ2**: How does Greek adolescent EFL learners' DM use change over time?

Because of the non-conclusiveness of previous research which has documented increase (Tavakoli, 2018), decrease (Polat, 2011) or no change (Magliacane, 2020), it is not possible to hypothesise the direction or pattern of EFL learner DM development. For reasons explained in Chapter 4, Section 4.5, learners were tracked throughout a 5-month span.

In order to understand the nature of DM development in EFL contexts (increase, decrease, fluctuation or stability), various individual and contextual factors need to be examined. In CDST, these are the "control parameters" of the system, influencing the system to an attractor state or inducing changes in the system (Larsen-Freeman & Cameron, 2008). Spoken proficiency, formal instruction, ISLL and motivation were identified in the literature review as factors which have been or could be associated with DM use. To begin with, it is important to examine in depth each factor in isolation and their relationship with the pragmatic phenomenon over time rather than, as Taguchi and Roever (2017) argue, resorting to post-hoc interpretations. This is addressed by RQ3:

> **RQ3**: How do the factors of spoken proficiency, formal instruction, ISLL and motivation each impact learners' DM use over time?

In terms of RQ3, it is hypothesised that there will be a positive association between frequent and broad DM use, on the one hand, and ISLL activities, on the other, and especially activities that could encourage exposure to and use of DMs (e.g. TV watching in Bednarek, 2018). Motivation to become a fluent L2 speaker (Ushioda, 2016) is also hypothesised as a positive influence in encouraging frequent and broad DM use. The possible positive effect of spoken proficiency is less clear given that DM use can be linked both to fluency and dysfluency (Crible & Pascual, 2019), while it is hypothesised that aspects of formal instruction will not be associated with broad and frequent DM use.

According to CDST, factors interact, shaping language development over time (Hiver & Al-Hoorie, 2020). However, most DM studies have examined factors in isolation. It is important to bring factors together in order to disentangle their effect on DM use over time (Davydova & Buchstaller, 2015). RQ4 examines this:

> **RQ4**: Which of the factors of spoken proficiency, formal instruction, ISLL and motivation, taken together and controlling for age and gender, contribute(s) to broad and frequent learner DM use over time?

In studies of groups of learners, the group outcome might conceal individual variation (de Bot, 2007). CDST proponents like Vespoor (2015:43) posit that "no individual will develop in exactly the same manner". While RQ3 and RQ4 looked into the group of learners as a whole, RQ5 enquires about individual trajectories:

RQ5: How do the factors of spoken proficiency, formal instruction, ISLL and motivation interact with learners' DM use over time at the individual level?

It is hypothesised that the pattern of development and the interactions between factors will not be the same for all learners.

It must be acknowledged at this point that selecting and investigating only a handful of factors which could influence DM use might appear as a reductionist approach. However, following common practice in CDST research (e.g. Gilmore 2016; Simpson & Rose, 2021), the incorporation of specific factors is a literature-informed decision. Furthermore, it is practically not feasible for CDST methodologies to include all possible variables that may influence the phenomenon under scrutiny, given the myriad of influences in one's learning trajectory (Sockett & Kusyk, 2015). Nevertheless, it should be noted that other factors, which are not taken into account here (e.g. identity, agency, willingness to communicate), might be at play.

To conclude, this chapter provided a review of previous literature on learners' spoken DM use. Domains in the literature to review were identified based on a working hypothesis (presented in Section 3.1), which sprang from the researcher's previous research and teaching experience. Gaps in the literature were identified and RQs were formulated as a result. The following chapter presents the methodology which was followed in the present study in order to answer the RQs.

Chapter 4. Methodology

This chapter presents the methodology implemented in this study, including descriptions of study design (4.1), sample recruitment (4.2), researched variables (4.3), data collection instruments, data collection procedure and the ethical considerations (4.5), data processing (4.6) and data analysis (4.7). The chapter also presents details of a pilot study (4.4) conducted to inform the design of the main study.

4.1. Research design

To address the RQs, the present study adopted mixed methods in a longitudinal design at the level of both data collection and analysis. The combination of quantitative and qualitative methods in longitudinal L2 pragmatics research has been advocated in a special issue of System journal (Mixed method approaches in investigating pragmatic learning, 2018), due to its two main strengths. Firstly, the gathering of both numeric and qualitative data provides a more complete picture of the pragmatic phenomenon under examination than if it was investigated solely by the use of either a quantitative or qualitative approach (Taguchi, 2018). Secondly, mixed methods provide a precise measurement of pragmatic development coupled with thorough explanation of the observed patterns and changes over time (Taguchi, 2018). Mixed methods are also favoured in CDST research (Hiver & Al-Hoorie, 2020). A combination of methods for data collection and analysis allows a more accurate examination of the dynamic interplay of factors that shape an individual's learning-scape (MacIntyre et al., 2017). For these reasons, mixed methods were considered the most appropriate and informed approach for the design of the present study.

Following Taguchi (2012; 2018), a longitudinal design is most suitable for the observation of pragmatic development: the same learners are tracked over time to record patterns and changes in their L2 use (RQ1, RQ2) as well as to examine time-varying and time-invariant individual and contextual factors that could be associated with learners' L2 use over time (RQ3, RQ4, RQ5). From a CDST perspective, significant changes in the variables examined may not occur when learner systems self-organise into attractor states and therefore display relatively stable behaviour (Henry, 2015; Hiver, 2015). Nevertheless, a longitudinal design is crucial for the investigation of developmental change or lack thereof and constitutes a more apt method than cross-sectional quantitative studies which only offer reductionist snapshots (Schulze, 2017).

The present design corresponded to the four criteria for longitudinal studies outlined by Ortega and Iberri-Shea (2005). The first criterion is length of study; learners' DM use and the different individual and contextual factors were examined over five months, a period of time that falls within the recommended time span, typically ranging between four months and four years (Ortega & Iberri-Shea, 2005). The choice of five months was informed by further practical issues, discussed in Section 4.5.

The second criterion is iterative data collection; data collection was repeated at four time-intervals and was systematic, comprising the same research instruments at all four time-points (Section 4.5). The choice of four data collection points was informed by previous literature (Curran et al., 2010; Barkaoui, 2014; Hiver & Al-Hoorie, 2020), which postulates that a minimum of three repeated measures is needed in order to apply the appropriate statistical techniques that best capture change over time and determine whether change is steady (i.e. linear), accelerated, decelerated or flat (i.e. displays a plateau). As will be explained in Section 4.5, research instruments were the same at all time-points in order to ensure comparability of observations and separate time-induced from task-induced variability (Barkaoui, 2014). At the same time, the content of most instruments slightly varied to ensure data validity by avoiding participants possibly becoming familiar with the instruments to such an extent that it could induce decreased interest over time or practice effects, i.e. changes in performance because of prior experience with the instrument's content rather than changes in the measured constructs (Dörnyei, 2007; Barkaoui, 2014).

Ortega and Iberri-Shea's (2005) third criterion for longitudinal studies is analysis that captures change over time. Data analysis (Section 4.7) was conducted both at group level, through the implementation of advanced statistical techniques (i.e. mixed-effects modelling) that took into account repeated measures, and at individual level, through the examination of individual trajectories from beginning to end of the study.

The fourth criterion is tracking the phenomenon in context rather than in experimental conditions. The study did not comprise an instructional intervention with pre- and post-tests as that constitutes experimental conditions. Instead, the researcher employed tools with the aim to elicit spoken DM use that was representative of language used in the particular context under examination. Moreover, the study of all variables was contextualised: it was situated in the Greek EFL context whose particularities were taken into consideration both at data collection and interpretation of findings.

Previous DM research has often employed a corpus-based methodology (e.g. Buysse, 2017), whereby data on spoken DM use are extracted from an existing corpus (i.e. database of recordings and/or transcriptions of language use). In those studies, corpus-based data analysis is then used to analyse learner DM use and compare it with that of NSs or learners of various L1 backgrounds. The present study did not follow a corpus-based methodology. Firstly, the study did not aim to compare learner data to a corpus of NS DM use. Secondly, the study focused on understanding factors that influenced the frequency and range of DM use rather than explore how DMs were employed through a detailed functional analysis. Therefore, a corpus-based methodology was deemed unsuitable.

Table 4.1 presents the research questions together with methods of data collection and analysis to answer each RQ.

Table 4.1 Research questions and methods of data collection and analysis.

Research Question		Data collection	Data analysis
RQ1.	What are the characteristics of DM use in Greek adolescent EFL learners' spoken discourse with regard to the following markers: *so, well, just, like, I don't know, actually/in fact, you know, I mean, sort of/kind of,* and the category of general extenders?	Audio-recordings of speaking activities between each student-participant and the researcher for the collection of quantitated language data on students' spoken DM use.	Combination of descriptive statistics and inferential statistics (i.e. Friedman's tests, Spearman rho correlations, Kruskal-Wallis tests) to examine different aspects of learner DM use.
RQ1a.	How is the learners' DM use similar to or different from DM use in their teachers' discourse and the DM content of instructional material with regard to the markers under examination?	Audio-recordings of teacher talk during their lessons for the collection of quantitated language data on teachers' DM use. Parts of textbooks and additional instructional material (that deal with spoken language) for the collection of quantitated language data on the DM content of instructional material.	Descriptive analysis to identify differences in DM use between students, teachers and instructional material.
RQ2.	How does Greek adolescent EFL learners' DM use change over time?	Quantitated language data on students' spoken DM use (already collected for RQ1)	Generalized linear mixed effects model to examine change over time in DM use, taking repeated measures and individual variation into account.
RQ3.	How do the factors of spoken proficiency, formal instruction, ISLL and motivation each impact learners' DM use over time?	Quantitated language data on students' spoken DM use (already collected for RQ1). Speaking scores assigned to each student's oral performance in the speaking activities by external assessors (for the factor of spoken proficiency).	Generalized linear mixed effects models to examine (a) change over time in each factor of interest and (b) the effect of each factor of interest in DM use, taking repeated measures and individual variation into account. Qualitative, thematic analysis of student-participants' semi-structured interviews with deductive and inductive coding to explore

Research Question		Data collection	Data analysis
		Assessors' comments to each student's oral performance in the speaking activities (for the factor of spoken proficiency). Quantitated language data on teachers' DM use and DM content of instructional material already collected for RQ1a (for the factor of formal instruction). Questionnaire with quantitative data (for the factor of ISLL) Semi-structured interview with quantitative data, quantitated qualitative data and qualitative data (for the factors of ISLL and motivation).	further the effect of the factors of interest in DM use. Frequency count and qualitative analysis of assessors' comments to gain more insight into the effect of spoken proficiency in DM use.
RQ4.	Which of the factors of spoken proficiency, formal instruction, ISLL and motivation, taken together and controlling for age and gender, contribute(s) to broad and frequent learner DM use over time?	Quantitated language data on students' spoken DM use (already collected for RQ1). Quantitative data and quantitated qualitative data on the factors of interest (already collected for RQ3).	Generalized linear mixed effects models with key sub-variables of the factors of interest to identify important predictors of DM use, taking repeated measures and individual variation into account.
RQ5.	How do the factors of spoken proficiency, formal instruction, ISLL and motivation interact with learners' DM use over time at the individual level?	Quantitated language data on students' spoken DM use (already collected for RQ1). Quantitative and qualitative data on the factors of interest (already collected for RQ3).	Qualitative analysis of multiple case studies through the CDST lens.

4.2 Population and sample

4.2.1 Population

The target population consists of Greek adolescent EFL learners who reside in Greece. The population attends weekly EFL lessons in secondary morning schools (state or public) as part of the school curriculum and receives additional EFL tuition outside the official school system, through private tuition at home and/or in private language schools (Dendrinos, Zouganeli & Karavas, 2013). Private language schools (called "frontistiria") are institutions that operate in late afternoons and evenings and offer non-compulsory English lessons to school children usually aged 8 to 17 (and to a lesser extent to adults), with the aim of preparing students for English language certification exams (Mattheoudakis and Alexiou, 2009). English language certification exams are national or international standardised tests assessing the use of grammar and vocabulary and/or the four language skills (reading, listening, writing and speaking) and are administered in Greece by accredited examination boards (e.g. National Foreign Language Exam System, n.d.; Cambridge Assessment, 2021; Michigan Language Assessment, 2021). If successful in the exams, students obtain language certificates which demonstrate proficiency at different CEFR levels, ranging from A1 (i.e. beginner) to C2 (i.e. proficient; Council of Europe, 2018). Private English language schools prepare students for official certification to at least B2 level of proficiency and up to C2 level.

The emphasis on intensive English language education offered by private institutions and the "mania for foreign language certification" (Dendrinos et al., 2013:17), is a widespread phenomenon in Greece and is rooted in societal demands (Rothoni & Mitsikopoulou, 2019), given the importance ascribed to acquiring English, as explained in Chapter 1. Compared to morning secondary schools, evening language schools provide more rigorous exam preparation, offering more intensive courses and higher number of hours of formal instruction per week (Angouri et al., 2010; Dendrinos et al, 2013). According to Angouri et al. (2010), classes in evening language schools are more homogenous in terms of student achievement, compared to the wider variability found in morning secondary schools. For this reason, the former are considered more prestigious than the latter and are trusted more by parents who, associating language instruction with language certification, are confident that their children will be adequately prepared towards certificates that will improve the latter's future employment prospects (Dendrinos et al., 2013).

Besides engaging in formal learning of English beyond the official school system, the target population also has informal encounters with English through media, given the presence of English in films, TV[7], radio and the internet (Rothoni & Mitsikopoulou, 2019). Use of the internet, particularly through smartphones, is widespread among Greek adolescents (Elafros, 2020).

4.2.2 Sample

In order to answer the RQs, the study utilised a combination of purposive and convenience sampling (Mehdi Riazi, 2016): participants were selected based on a certain profile that was decided upon (purposive sampling) and were recruited from selected geographical locations for practical reasons (convenience sampling). The study required Greek adolescent student-participants (together with their teachers), who attended English classes in language schools studying towards CEFR B2 or C2 qualifications. Selecting the student-sample (and consequently the teacher-sample) from evening language schools rather than morning secondary schools was decided upon based on the following grounds. Firstly, based on Angouri et al. (2010), student-participants recruited from classes in evening language schools were expected to form a more homogenous group in terms of language achievement than if recruited from morning secondary schools: all students in language school classes prepare towards the same language certificate exams, which is not the case in secondary school classes. Secondly, it was believed that students enrolled in exam preparatory classes offered by language schools would have the appropriate language level and motivation to engage in oral production in English (and likely oral DM use) for the purposes of the present study.

For practical reasons, participants were sampled from language schools in the cities of Athens, Greece's capital, and Patras, Greece's third-largest city. The two cities are in close proximity (133mi. distance) and, therefore, data collection, which was carried out by the researcher alone and which required repeated visits to the schools due to the study's longitudinal nature, was a manageable task. The big size of the cities enabled access to a number of language schools leading to the recruitment of the desired sample size.

[7] In Greece, English-speaking TV and cinema (with the exception of animated movies for children) are not dubbed but broadcast in the original language with Greek subtitles.

Regarding the intended sample size, two issues were taken into consideration. Firstly, the aim was a small and manageable cohort of informants, since the study looked into a variety of variables in depth and over time. Secondly, the mixed methods design required a suitable sample size for the employment of statistical techniques in the analysis; a minimum of 50 participants has been recommended for quantitative analysis (Moineddin et al., 2007). Therefore, the present study aimed for a sample size of 50 to 60 student-participants together with their teachers. Given that participant attrition is expected in longitudinal research (Dörnyei, 2007), the researcher attempted to approach a larger number of potential participants during recruitment.

4.2.2.1 Recruitment and participant attrition

Before recruiting participants, the researcher gained approval from the Open University Human Research Ethics Committee to conduct the present study (HREC ref.:2736, Appendix A1). More details on the study's ethical considerations are presented in Section 4.5.3.

In mid-September 2018, which marked the beginning of the academic year 2018-2019 in the Greek education system, the researcher contacted via e-mail and phone calls language schools in Athens and Patras that provided exam preparatory classes for B2 and/or C2 level qualifications. Upon initial contact with school directors[8], the researcher provided details about the current study, asking permission to recruit student and teacher participants from lower-level (B2) and/or higher-level (C2) exam preparatory classes of their schools (see Appendix A2 for the recruitment email). The researcher asked permission to visit the schools in order to briefly introduce herself and the study orally to students and teachers as well as distribute participant information leaflets to students (Appendix A3) and teachers (Appendix A5) and opt-in consent forms for students (Appendix A4) and teachers (Appendix A6). Four school directors responded positively to the researcher's calls or emails, agreed to participate and promptly returned consent forms for the commencement of the study, after the researcher's initial visit to the schools.

[8] School contact details (e.g. phone numbers, emails) were found online. It was decided that if the minimum number of participants (i.e. 50) was not reached after contacting 15 initial schools, the researcher would extend the call to more schools who met the criteria. However, that was not needed as the intended sample size was obtained.

The present study took place in 4 schools: Schools A and B (located in Patras, Greece) and Schools C and D (located in Athens, Greece). Teachers and students from overall 6 classes (3 lower- and 3 higher-level) agreed to participate. It was not possible to recruit intact classes as not all students in every class opted in. Of 64 students that were approached, 57 agreed to participate and returned consent forms signed by their parents. External attrition (10.9%) did not appear to be systematic, as students who did not opt in belonged to different class-levels and schools and were of both genders (n=3 females, n=4 males).

Internal attrition was also recorded (9.0%). Of the 57 students who started the study, 52 completed it. Withdrawals occurred during the school year (January–March 2019); five students from higher-level classes discontinued their school attendance and exam preparation and, consequently, had to be excluded from the study. Internal attrition appeared somewhat systematic as all withdrawals were from higher-level classes, but of different schools and of both genders (n=3 females, n=2 males).

4.2.2.2 Student and teacher sample

In total, 52 students and speakers of L1 Greek participated in the present study. Table 4.2 shows the distribution of students in schools for the whole sample and by class-level. Twenty-one students attended lower-level (B2) preparatory classes in order to sit B2 level exams at the end of the school year (May-June 2019). Thirty-one students attended higher-level (C2) preparatory classes and were in the first of a two-year preparation in order to sit C2 level exams at the end of the following year (May-June 2020). Students in higher-level classes were all holders of B2 level certificates. All students attended morning secondary schools as well as the evening language schools; none reported attending additional private English tuition at home. Most students were recruited from schools in Patras (N=36, 69.2%) and the remaining from schools in Athens (N=16, 30.8%).

Table 4.2 Student demographics.

School (City)	Full sample N (%)	Class Level N (%)	
		Lower level	Higher level
A (Patras)	20 (38.5)	10 (19.2)	10 (19.2)
B (Patras)	16 (30.8)	6 (11.5)	10 (19.2)
C (Athens)	5 (9.6)	5 (9.6)	0 (0)
D (Athens)	11 (21.2)	0 (0)	11 (21.2)
TOTAL	52 (100)	21 (40.4)	31 (59.6)

Students were aged between 13 and 17 years old (M=15.33, SD=1.13); age ranged from 13 to 16 years in lower-level classes (M=14.67, SD=1.02) and from 14 to 17 years in higher-level classes (M=15.77, SD=0.99). The majority of students were female (n=33 female and n=19 male). The distribution was n=13 female and n=8 male in lower-level classes, and n=20 female and n=11 male in higher-level classes. Uneven gender distribution appeared to be a particularity of the present sample; both genders are believed to be equally represented in the population and were equally represented in student-withdrawals. Years of prior English formal instruction ranged from 5 to 11 years (M=7.55, SD=1.48) and hours of English instruction attended per week ranged from 4 to 8 hours (M=6.00, SD=1.7). All students owned and used a smartphone.

In total, 4 teachers participated in the present study. Table 4.3 depicts their demographics. All teacher-participants were female and had Greek as their first language. Teachers 1 and 2 of Schools A and B, respectively, participated with both their lower-level and higher-level student-participants. Teacher 3 of School C participated with her lower-level class and Teacher 4 of School D participated with her higher-level class. Teachers differed regarding their work experience, with Teacher 1 having the longest (33 years) and Teacher 2 the shortest (7 years) teaching experience. No teacher-participant had taught abroad or in morning state schools.

Table 4.3 Teacher demographics.

Variables	Teacher 1	Teacher 2	Teacher 3	Teacher 4
Gender	Female	Female	Female	Female
Work experience (years)	33	7	18	26
School	School A	School B	School C	School D
City of residence	Patras	Patras	Athens	Athens
Class level(s) taught	Lower/ higher	Lower/ higher	Lower	Higher

4.3. Variables

The study examined the independent variable of learners' spoken DM use. Four independent variables, comprising different sub-variables, were explored: spoken proficiency, formal instruction, informal second language learning (ISLL) and motivation.

4.3.1 DM use

The dependent variable of the present study was learners' spoken DM use and was composed of the following five sub-variables:

- **DM range**: total number of DM types used. The total number of DM types examined was 10 and comprised the markers: *so*, *well*, *just*, *like*, *I don't know*, *actually/in fact*, *you know*, *I mean*, *kind of/sort of*, and the category of general extenders. It must be noted that students may have used a range of other DMs, not covered in this study.

- **overall DM frequency**: total number of DM tokens used, divided by the individual's total word count and normalised by 1,000.

- three categories of DM frequency, namely,

    - **textual DM frequency**: total number of DM tokens with textual function used, divided by the individual's total word count and normalised by 1,000.

    - **interpersonal DM frequency**: total number of DM tokens with interpersonal function used, divided by the individual's total word count and normalised by 1,000.

    - **textual-interpersonal DM frequency**: total number of DM tokens with textual-interpersonal function used, divided by the individual's total word count and normalised by 1,000.

Detailed information regarding the criteria for the selection of the 10 DM types under examination and the process of calculating the values for each aspect of DM use is provided in Section 4.6.1.

4.3.2 Spoken proficiency

Four aspects of spoken proficiency were measured, based on the four criteria outlined in the descriptors for the speaking part of the International English Language Testing System

(IELTS, 2020). The four aspects along with their definitions, as presented by Seedhouse et al. (2014:5), are:

- Fluency and coherence, i.e. "the ability to talk with normal levels of continuity, rate and effort and to link ideas and language together to form coherent, connected speech"

- Lexical resource, i.e. "the range of vocabulary the candidate can use and the precision with which meanings and attitudes can be expressed"

- Grammatical range and accuracy, i.e. "the range and the accurate and appropriate use of the candidate's grammatical resource"

- Pronunciation, i.e. "the capacity to produce comprehensible speech".

4.3.3 Formal instruction

The following aspects of formal instruction were examined:

- Amount of formal instruction: total number of hours of formal instruction attended per week and total number of previous years of formal instruction.

- Teachers' DM use: DM range, overall DM frequency and the three categories of frequency (i.e. textual, interpersonal and textual-interpersonal) recorded in teachers' speech.

- DM content in instructional material: total number of DM types and DM tokens in textbooks and additional instructional material.

Detailed information about the processing of teachers' DM use and DM content in instructional material prior to data analysis is presented in Section 4.6.1.

4.3.4 ISLL

ISLL was conceptualised as engagement in out-of-class activities involving the different language skills. The present study follows the traditional matrix of four language skills, i.e. listening, reading, writing, speaking (Council of Europe, 2001). It also takes into account the more recent categorisation proposed by the Council of Europe (2018), based on modes of communication: Reception, Production, Interaction[9]. For the purposes of the present study, listening and reading fall under reception, whereas writing and speaking fall under production (e.g. sustained spoken monologue/creative writing) or interaction (e.g. spoken/written communication with others).

ISLL was studied by purpose. Purpose comprised three types:

- Only for leisure: primary reason for ISLL is communication, entertainment or seeking information (Sockett, 2014; Sundqvist & Sylvén, 2016; Lee & Dressman, 2018).

- Only for homework: ISLL is language-learning oriented with the sole purpose of intentional language learning practice (Lai & Gu, 2011; Sundqvist & Sylvén, 2016; Lee & Dressman, 2018).

- Both for leisure and homework: ISLL with the aim to entertain oneself, communicate or seek information, as well as to intentionally practise aspects of the language, such as vocabulary or listening skills ("dual purpose engagement", Trinder, 2017:407; Sundqvist & Sylvén, 2016; Lee & Dressman, 2018).

The study also looked into frequency of ISLL (i.e. never, occasionally and frequently) and characteristics of ISLL (i.e. students' behaviours, such as use of smartphones for engaging in different activities or use of subtitles when watching TV/films).

[9] The Council of Europe (2018:175) has added a fourth component, i.e. Mediation. The present study did not document instances of Mediation in participants' out-of-class activities; the component was therefore not taken into consideration.

4.3.5 Motivation

Two influential motivational frameworks were utilised to explore stated motivations. For reasons outlined in Section 3.4.3, the present study brought together constructs deriving from Dörnyei's (2005) L2 Motivational Self System (L2MSS) and Deci and Ryan's (1985) Self-Determination Theory (SDT) adapted for L2 learning. The constructs of each framework are defined below based on previous literature, and the integration of the two frameworks is described at the end of this subsection.

L2MSS components:

- Future L2 Self
    - Ought-to L2 Self (Dörnyei, 2005): the individual a language learner feels obliged to become, in order to meet certain expectations.
    - Ideal L2 Self (Dörnyei, 2005): the individual a language learner would like to become with regard to their L2 knowledge and/or use.
- Current L2 Self (Thorsen et al., 2020): the individual a language learner perceives they are at present. In the present study, the Current L2 Self is believed to be shaped by the L2 Learning/Speaking Experience within informal and formal contexts.
- L2 Learning Experience (Dörnyei, 2019:29): "the perceived quality of learners' engagement with various aspects of the language learning process". Because of the present study's focus on L2 speaking (spoken DM use), the L2 Learning Experience was also examined from the scope of L2 speaking. Following Csizér and Kálmán (2019), the L2 Learning/Speaking Experience concerned learning/speaking in two types of contexts: formal and informal (out-of-class) contexts.
- Self-discrepancy (Higgins, 1987; Thorsen et al., 2020): the discrepancy between the language learner's perception of themselves at present (Current L2 Self) and their perception of themselves in the future (Future L2 Self).

SDT components:

Ryan and Deci (2000) refer to four types of extrinsic motivation[10]. Following Cole (2015), the two less internalised types of extrinsic motivation (i.e. extrinsic external and extrinsic introjected) are jointly referred to in this study as 'extrinsic external motivation', whereas the two more internalised types of extrinsic motivation (i.e. extrinsic identified and extrinsic integrated) are jointly referred to in this study as 'extrinsic internal motivation'. The SDT components are:

- Amotivation (Ryan & Deci, 2000): a lack of willingness to engage in L2 learning.

- Extrinsic external motivation

    - External motivation (the least internalised; Ryan & Deci, 2000): engaging in L2 learning not for personal reasons, but because of external demands, rewards, or values.

    - Introjected motivation (less internalised; Ryan & Deci, 2000): engaging in L2 learning in order to avoid feelings of shame or embarrassment, or to satisfy one's self-esteem.

- Extrinsic internal motivation

    - Identified motivation (more internalised; Ryan & Deci, 2000): engaging in L2 learning for reasons one personally values.

    - Integrated motivation (more internalised; Ryan & Deci, 2000): engaging in L2 learning because it forms part of someone's identity and enables them to express their sense of self.

[10] In their work, Ryan and Deci (2000:72) use the term "regulation" for the different types of extrinsic motivation. For consistency purposes and in accordance with previous literature (e.g. Cole & Vanderplank, 2016), this study uses the term "motivation" in place of "regulation"; therefore, "external regulation" (Ryan & Deci, 2000:72) is referred to here as "external motivation", and so on.

- Intrinsic motivation (the most internalised; Ryan & Deci, 2000): engaging in L2 learning because of the mere enjoyment of the learning experience.

    - Stimulation (Noels et al., 2000): engaging in L2 learning because of an arousing interest in and aesthetic appreciation of L2 learning itself.

    - Knowledge (Noels et al., 2000): engaging in L2 learning because of the enjoyment associated with finding out about new things.

    - Accomplishment (Noels et al., 2000): engaging in L2 learning because of the satisfaction one feels when they accomplish difficult tasks in the L2.

Figure 4.1 depicts the integration of the two frameworks attempted in this study. The motivational orientations of the SDT framework were used to provide different degrees of internalisation to the perceived self-states: Current L2 Self and Future L2 Self. All SDT sub-types could map to a Current L2 Self. In terms of a Future L2 Self, extrinsic external motivation (i.e. external or introjected) could map to an Ought-to L2 Self, whereas extrinsic internal motivation (i.e. identified or integrated) could map to an Ideal L2 Self.

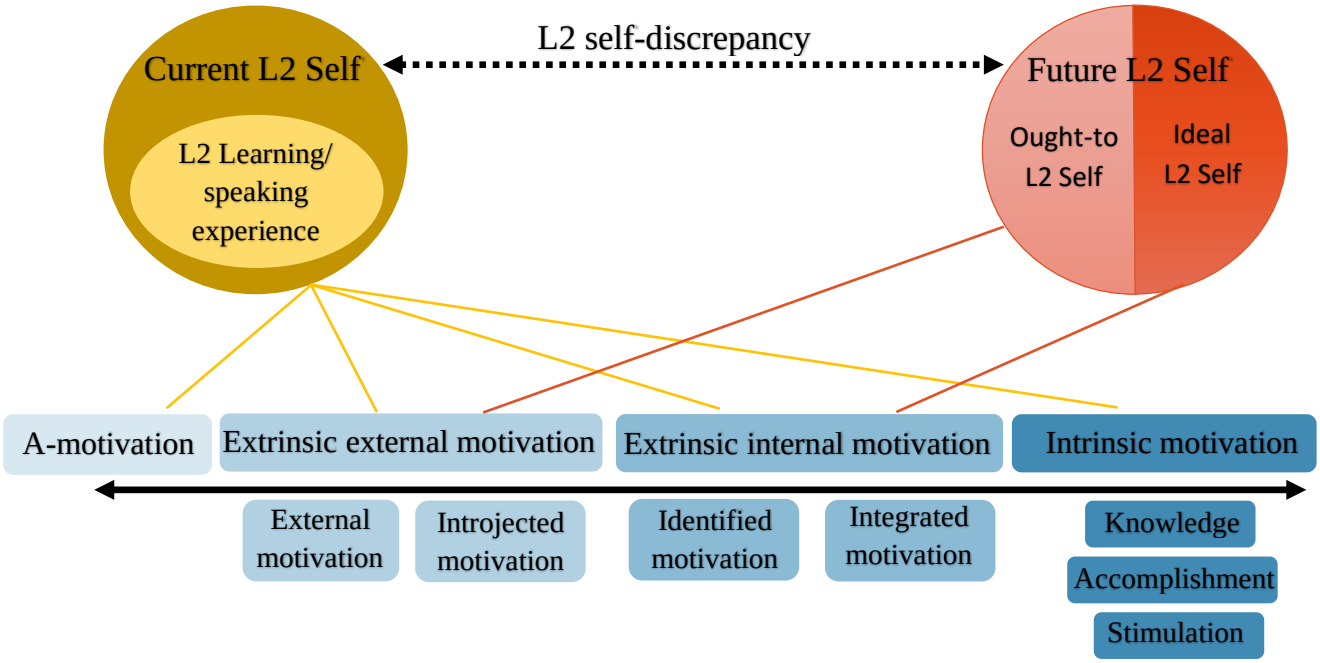


Figure 4.1 Integration of L2MSS and SDT components.

4.4 Pilot study

Eight months prior to the recruitment of participants and the commencement of data collection for the present study (Section 4.5), a cross-sectional, two-week pilot study was conducted at a language school in Patras, Greece. Seven learners (male n=2, female n=5) and their teacher (female) participated voluntarily and matched the participants of the main study in terms of age, L1 and class-level. A first aim was to examine whether students of the same proficiency and who had been exposed to the DM use of the same teacher differed in their DM use. In this way, the researcher could assess the likelihood of whether factors other than proficiency and DM input in formal instruction, which most DM research has studied to date, played a role in learner DM use. For this reason, pilot participants were recruited from the same class-level (lower-level, studying towards a B2 level language certificate) and were all described by their teacher as high achievers.

A second aim was to pilot the data collection instruments (Section 4.5.1) and practise how to carry out the processing of data (Section 4.6). In order to elicit spoken DM data and data on spoken proficiency, different speaking activities were piloted. Those ranged from narrative tasks to personal questions and conversation with the researcher so as to identify the most suitable for inclusion in the main study. It was shown that the inclusion of a variety of activities would ensure adequate size of spoken production and employment of DMs. Other issues that were decided upon were the assessment rubric for the scoring of spoken proficiency (Section 4.6.2), the type of transcription (manual vs. automated) and the functional taxonomies for the assignment of functions during the DM coding procedure (Section 4.6.1). Data regarding the DM input in formal instruction were collected through an audio-recording of teacher talk during a lesson.

In terms of collecting data on students' ISLL and motivation, the pilot study tested the employment of different types of instruments, such as a paper-form questionnaire, an online survey-diary and a semi-structured interview. It was shown that a combination of a paper-form questionnaire (Section 4.5.1.2) and a semi-structured interview (Section 4.5.1.3) was the most suitable for participants of that age as several practical issues surfaced (e.g. students forgot to log into their email accounts to complete an online survey-diary but were familiar and consistent with returning a paper-form questionnaire). Students were found to engage in various out-of-class activities. A list of activities was generated from pilot participants' answers and informed the design of the final questionnaire for the main study. For example, sending voice-messages on WhatsApp, which was initially

missing from the questionnaire, was included because it was mentioned by pilot participants. Designing the instruments based on student experiences rather than the researcher's speculations was deemed essential.

Regarding both the questionnaire and interview, suggestions about the language of administration, the re-wording of items and the addition of questions were taken into consideration. Students' understanding of different constructs was also ensured. For example, participants offered their insights into the construct of "purpose" of ISLL; they provided suggestions regarding how they conceptualised the different types of purpose (leisure, homework, both leisure and homework) when interacting with English through informal sources.

The findings of the pilot study showed that although all participants had the same teacher and demonstrated high oral proficiency during the one-to-one speaking activities with the researcher (as assessed by two teachers who listened to and graded audio-recordings of students' spoken performance), students markedly differed in terms of their DM use. Further analysis suggested that between-learner differences in DM use accompanied between-learner differences in the nature of their ISLL and motivation. This preliminary investigation suggested that the examination of those factors could reveal insights into learners' DM use, but more evidence was needed to establish the strength of these findings. Findings further confirmed that (a) students of that age and class-level used DMs in their spoken productions through the designed speaking activities, (b) certain DMs in their speech were not used by their teacher, (c) ISLL was common among the students, and (d) students were able to voice views about their motivation in a comprehensive manner. Based on these findings, the researcher was encouraged to pursue a larger scale study with longitudinal and iterative data collection and analysis in order to examine those factors and their effect on learner DM use over time and address the RQs.

4.5 Data collection

This section presents the data collection instruments, the procedure and the ethical considerations of the study. Table 4.4 shows the outline of the study, which was longitudinal and took place in the academic year 2018-2019 during a 5-month span. Data collection commenced on 19 November 2018 (towards the beginning of the academic

year) and ended on 19 April 2019 (towards the end of the academic year). Responding to calls in the literature for longitudinal studies to include a minimum of three repeated measures (Barkaoui, 2014), data collection was repeated four times, through four data collection stages, and followed the same procedure in each language school. Data collection that approximately expanded over a school year was considered suitable for the purposes of the present study, as it involved key points in an academic year and the Greek EFL context, i.e. at the first semester of the school year (Time 1), after the Christmas break (Time 2), towards the middle of the year (Time 3), and towards the end of the school year (Time 4), which was before the Easter break and lower-level participants' (n=21, 40%) certification exams. For practical reasons, data collection lasted 5 months during the year, as the study could commence only after all participants returned the signed consent forms to the researcher; also, data collection had to finish before students' final exams. Data collection that was limited to one academic year, rather than for example two academic years, was preferred as it ensured lower attrition rates; several lower-level students might not resume attendance of formal instruction in higher-level classes the year after obtaining B2 certificates (Angouri et al., 2010).

It was attempted to have equally spaced data collection stages of equal duration, as suggested by Ortega and Iberri-Shea (2005); however, spacing and duration of data collection stages varied. Because of the Christmas break and issues with schools' promptness to resume their participation in the study after that period, there was a wider gap between stages 1 and 2 than between stages 2, 3 and 4. The duration of stage 1 was also longer than the remaining stages, owing to practical issues regarding participant availability during that stage.

Table 4.4 Outline of study.

Year dates	Duration	Data Collection Stage	Details
1 Oct 2019			Beginning of school year
19 Nov 2018			**Start of study**
19 Nov 2018 – 21 Dec 2018	5 weeks	Stage 1	Speaking activities 1 Questionnaire 1 Interviews 1 Classroom-recordings 1
22 Dec 2018 – 6 Jan 2019	2-week Christmas break		
7 Jan 2019 – 27 Jan 2019	3-week gap		
28 Jan 2019 – 20 Feb 2019	3 ½ weeks	Stage 2	Speaking activities 2 Questionnaire 2 Interviews 2 Classroom-recordings 2
25 Feb 2019 – 22 Mar 2019	4 weeks	Stage 3	Speaking activities 3 Questionnaire 3 Interviews 3 Classroom-recordings 3
26 Mar 2019 – 19 Apr 2019	4 weeks	Stage 4	Speaking activities 4 Questionnaire 4 Interviews 4 Classroom-recordings 4 Collection of instructional material
19 Apr 2019			**End of study**
22 Apr 2019 – 05 May 2019	2-week Easter Break		
18 May 2019 – 29 June 2019	Certification exam period for schools		
30 June 2019			End of school year

4.5.1 Research Instruments

Three main instruments were designed to collect data at each time-point in order to address the study's RQs:

- Speaking activities: designed to collect data on students' DM use and spoken proficiency.
- Questionnaires: designed to collect data on students' ISLL.
- Semi-structured interviews: designed to collect data on students' ISLL, stated motivations, formal instruction (e.g. number of previous years of formal instruction attended) and demographic factors.

Data were also collected from the following sources (details in Section 4.6.1):

- Classroom audio-recordings: used to collect data on teachers' DM use
- Visual artefacts, i.e. photographs of selected textbook pages and extra instructional material: used to collect data on the content of DMs in instructional material

4.5.1.1 Speaking activities

Four sets of speaking activities (Appendix B1), each administered at each time-point, were employed to collect data on spoken DM use and spoken proficiency. Activities included: introductory questions (part 1), video description followed by personal questions (part 2) and picture description followed by personal questions (part 3).

Activities were designed with the following three issues in mind. Firstly, it was crucial that they enabled the elicitation of adequate amount of oral language data so that DMs could occur. Therefore, each set included a combination of individual long turns and interaction with the researcher, whose turns were kept short, whilst students were probed to elaborate if they only contributed one-word turns (e.g. *yes*, *no*).

Secondly, activities comprised familiar structure and engaging content for adolescents (detailed in the description of each activity below), thereby encouraging participants to engage in spoken discourse, and, potentially, to produce DMs. A welcoming atmosphere and positive experience of participation in the study was desirable as students were

expected to provide data four times throughout the year and their continuous participation was essential.

Thirdly, it was important to elicit data that represented speech produced in the particular context of the study, i.e. language learning in the EFL context in Greece, so as to provide an accurate depiction of contextualised DM use. Therefore, care was taken to ensure that collected spoken data were less the result of task effect and more an accurate depiction of learner language used in the EFL context. It was important not to predispose students to stick to only one register (i.e. formal or informal) as it could influence their DM choices (e.g. induce the avoidance of more informal DMs), possibly resulting in discourse that was not representative of DM use in the present context. For this reason, different types of activities were employed so as not to impose a certain register throughout. For example, activities included personal questions which may lead to freer answers and more informal interaction, as well as picture description, which resembled part of students' formal speaking exams and may encourage more structured responses and formal register. The study followed previous research (e.g. Buysse, 2017) which has employed a combination of activities (e.g. narrative task, interview questions) to elicit both textual and interpersonal markers, given that studies that employed only one activity (e.g. narrative task in Jakupčević, 2019) reported prevalent use of one type of markers (e.g. textual in Jakupčević, 2019).

The first part of the activities functioned as a short icebreaker and included simple, introductory personal questions, e.g. "How are you going to spend your Easter holidays?". The second and third part included showing a video and pictures, respectively, which were used as prompts to elicit oral production. The use of videos and pictures as elicitation instruments was informed by previous studies that have employed these methods to explore L2 spoken DM use (videos in Müller, 2005; Lim, 2018; pictures in Buysse, 2017; Jakupčević, 2019). Participants' age and interests were also taken into account; as suggested by Erman (2001:1343), "[y]oung people seem to be more preoccupied with telling stories and reporting events which they have heard of, seen in films, or experienced themselves, than engage in argumentative discourse". During the piloting stage, it appeared that Greek adolescents related to the featured situations in the videos and pictures, which in turn encouraged oral production in English and DM use.

More specifically, the second part included showing a short duration video (1-2 minutes), which functioned as a prompt for description and two follow-up questions for discussion.

The videos were selected on the basis of their presumed interest to school-aged participants; they featured adolescents and contained themes such as use of social media and smartphones, relationships, friendship, bullying, and sports. Two videos were clips from popular, teenage-related movies (I am Number Four, The Hunger Games) and two videos were clips from online advertisements. All videos were downloaded from YouTube and edited to reduce their original duration; overloaded content would render the activity inappropriate as it could overwhelm the participants and negatively influence their performance. The videos included minimum or no dialogue in English, thereby enabling students to construct their own oral productions by drawing on their knowledge of language and using it creatively (Kasper & Singer, 2001).

Before being shown the video, participants were asked to watch and then describe it in as much detail as they could. Note-taking or re-watching the video was not allowed as the activities were designed to measure spontaneous oral performance. After the student's initial turn, the researcher followed up with a question about the clip (e.g. "What else did you see?", "What do you think is going to happen next?") and a personal question related to the clip (e.g. "Do you enjoy watching sports or participating in sports and why?").

The third part of the speaking activities comprised the description and comparison of two pictures, followed by a personal question (e.g. "Would you rather stay at a fancy hotel or go camping with your friends and why?"). The pictures were shown from the speaking parts of exam-preparation material intended for school-aged candidates and depicted themes such as music, movies and travelling. Participants were particularly familiar with the structure of the third activity, given a similar part in the speaking practice for their certificate exams.

The same speaking activities were assigned to all 52 student-participants and were similar in terms of duration, structure, and difficulty across time to ensure comparability within and between participants and to minimise task effect. At the same time, the content of the activities slightly differed at each time-point (i.e. different video clips and pictures were shown; different questions were asked) in order to mitigate any practice effect.

4.5.1.2 Questionnaire

A questionnaire (Appendix B2) was one of the two instruments employed to gather data on students' ISLL. The questionnaire was initially developed in English and subsequently translated into Greek to administer to participants. During piloting, potentially confusing wording was identified, and items were reworded. The same questionnaire was administered to all 52 student-participants at each data collection stage.

Previous longitudinal ISLL studies have employed diary logs, instead of questionnaires. In diary logs, participants provide details of their everyday encounters with English over a period of time (e.g. 8 weeks in Sockett & Toffoli, 2012), often recording the amount of time they spend engaging in an activity and providing reflections on learning experiences (e.g. Chik & Ho, 2017). The reason for not employing diary logs in the present study was mainly due to a limitation acknowledged in previous research regarding the gaps in record keeping, as adolescents (Sundqvist, 2009) and even adult participants (Benson et al., 2018) forget to complete compulsory daily or weekly diary entries resulting in missing data. For this reason, a questionnaire administered repeatedly was considered a more appropriate data collection tool. From piloting, it appeared that students would neglect to complete the questionnaire if it was administered online given their infrequent use of email accounts. For this reason, paper copies were handed out.

Several ISLL studies have used questionnaires which comprised frequency Likert scales to measure students' frequency of engaging in informal activities. The scales can include general or specific frequency estimates (e.g. "never", "1-3 hours per month", "1 hour per week", "2-3 hours per week", "4-5 hours per week", "6-7 hours per week", Kusyk, 2017:83). However, providing reliable daily, weekly or monthly time estimates might prove challenging, especially when an activity is scattered throughout the day or week, taking place at several intervals.

In an attempt to ensure reliability of responses, the items in the present questionnaire did not include frequency scales. Instead, the time span was limited to activities undertaken in the last 24 hours and participants were asked to indicate whether or not they had engaged in a certain activity at that period. The tool comprised closed-ended questions about (a) type of ISLL, i.e. whether or not students had participated in different activities outside the class in the last 24 hours according to each skill: listening/watching, reading, writing and speaking, (b) purpose for ISLL, i.e. whether each activity carried out in the last 24 hours

was performed only for leisure, only for homework or for both leisure and homework purposes, and (c) use of smartphones for ISLL, i.e. whether or not the activities were performed on a smartphone. Given the exclusion of frequency scales and the focus on the last 24 hours, it was considered important to gauge whether students' responses reflected their typical practices. For this reason, the following questions were asked: "Are all of the above answers typical of your contact with English outside the class?", "If you answered 'No', what was different this time and why?".

The inventory of different activities included in the questionnaire was informed by the pilot study and previous ISLL research (Sockett, 2014). To account for types of L2 practice that could possibly have been carried out by the participants but were not added as questionnaire items, students were asked to select the option "Other" and specify the activities undertaken. The question "Is there anything else you did in English in the last 24 hours?" was also included.

The purpose of the questionnaire was twofold. Firstly, it was used to collect initial, general data on students' ISLL, which were then validated by and explored further in subsequent interviews. Secondly, it functioned as a way to prepare participants to reflect on their everyday ISLL, helping them become more aware of their out-of-class L2 habits so that they could subsequently discuss them in more depth in the interviews. The reason for following this approach was due to participants' young age and possible inexperience in reflecting on personal habits.

4.5.1.3 Semi-structured interviews

Semi-structured interviews (Appendix B3) were used to collect data on demographics, formal instruction (class-level, number of previous years of formal instruction and hours of formal instruction attended per week), ISLL and motivation. All 52 students participated in the interviews.

Rich data on ISLL and motivation were collected through closed-ended and open-ended questions. As will be further explained in subsequent sections, most questions were designed to collect similar data from every time-point; it was important to measure the same constructs at each time-point so as to track change over time and gather comparable data between participants in a systematic way. Given the longitudinal and iterative nature

of the study, for questions that were repeated at each time-point, care was taken to use varied wording so as to mitigate a repetition effect and participants' relying on fixed responses. Other questions were only intended for particular time-points, as the particularities of each time-point were taken into consideration: Time 1 constituted the beginning of the present study and occurred at the early months of the school year; Times 2 and 3 were the middle points of the study and the school year; Time 4 marked the end of the study and was close to the final months of the school year. This informed the formulation of certain questions in ways that are discussed in subsequent sections (4.5.1.4 & 4.5.1.5).

All interview questions were initially designed in English and subsequently translated into Greek. The interviews were conducted in Greek in order to ensure that participants understood the questions, felt comfortable giving elaborate responses and were not concerned about making mistakes in English. Unclear or ambiguous answers were followed up by clarification questions. Every interview was audio-recorded and transcribed. Table 4.5 outlines the transcription conventions used when transcribing interview data. For the presentation of findings, participants' quotes were translated into English by the researcher (more about the translation process in Section 4.6.3).

Table 4.5 Transcription conventions for interview data.

Symbol	Meaning
R:	researcher's quote starts
S1:	participant's quote starts (the number indicates the number of the participant)
"word"	quote
'word'	word(s) originally uttered in English
<word>	word(s) added by the researcher to anonymise data
(word)	contextual comments added by the researcher
[...]	speech omitted by the researcher for the purpose of presenting example-quotes in this thesis

4.5.1.4 Semi-structured interviews: ISLL

With regard to the factor of ISLL, the main purpose of the interview was to triangulate data from students' responses to the questionnaire, elicit richer data on the questionnaire responses and track any changes in ISLL over time. Therefore, the interview primarily consisted of questions that were repeated at every time-point. Questions were designed to have a retrospective element: they referred to participants' responses to the questionnaire

which they had submitted at the corresponding time-point as well as to participants' responses to interviews of previous time-points[11].

The researcher commenced the interview asking follow-up questions to the participant's questionnaire responses regarding the type of activity, the purpose for engaging in an activity, and whether the activity was typical of the students' ISLL. Interview questions also elicited data on students' behaviours when engaging in different activities, such as reasons for not using subtitles when watching TV. The following are examples of the questions asked:

> 1a. "Here you ticked the option that you spoke to English with somebody through a call or video call and that you did that for leisure. Can you give more details?".
>
> 1b. "Is this typical of your contact with English outside the class?"
>
> 2a. "I can see that in the last 24 hours you did not write on social media in English. Is writing in English on social media not something you tend to do?"
>
> 2b. "Since our previous interview, is there any instance that you can recollect of writing on social media in English?".

Interviews at the second, third and fourth stages included variations of the following questions: "Has anything changed in your everyday contact with English from the last time we had the interview and why?", "Have you taken up any new activity in English and why?", "Is there something you don't do anymore in English in your free time and why?". The purpose was to track change in informal L2 habits over time but also to reveal possible reasons for change.

Owing to the study's focus on spoken DM use, it was important to examine whether and the extent to which student-participants attributed their DM learning/use to their ISLL. The following questions were asked: "When you speak in English, I noticed that you use <DM>. How do you think you have learned to use these word(s) when you are speaking?". Because the question enquired explicitly about DM use, it was formulated only at the final

[11] Before each interview at Times 2, 3, and 4, the researcher had studied each individual's interview transcript(s) from the prior time-point(s), students' questionnaire responses as well as the researcher's own notes in order to familiarise with each student's profile and follow up on already collected data.

time-point so as to avoid revealing at earlier stages the study's focus or drawing students' attention to DMs, as it might have affected participants' spoken performance, possibly causing them to either produce more DMs than normal or to refrain from using DMs.

4.5.1.5 Semi-structured interviews: Motivation

Open-ended questions aimed to collect data on motivation; that is, students' stated motivations for learning at present (Current L2 Self), their future self-states (Future L2 Self) and their L2 Learning/Speaking Experience in formal and informal contexts. Apart from questions that were explicitly designed to gather information on those aspects, data on motivation also appeared in answers to questions related to other items, such as when students reported details about their ISLL.

Questions that were repeated at every time-point intended to capture data on students' motivation at the respective time-point and track possible changes in motivation over time. Questions were either formulated to tap explicitly into either self-construct (i.e. Current L2 Self, Future L2 Self) or indirectly elicited information on the two self-states, so as to mitigate participants relying on fixed responses. For example, the question "What is your relationship with English at the moment?" was formulated in the present tense to directly enquire about a student's Current L2 Self, and the question "What is your most important goal you want to achieve in terms of English?" had a future scope and directly enquired about a student's Future L2 Self. Indirect questions such as "What are your most important reasons for learning English in your language school?" and "What are your most important reasons for having contact with English in your free time?" aimed to indirectly elicit data about either self-state as well as gather information on students' L2 learning experience in the two contexts (formal, informal). The decision to elicit data on motivation through such questions was guided by previous research (Cole, 2015; Henry & Cliffordson, 2017), which posits that perceptions about a Current L2 Self can be manifested in statements about ISLL owing to students' engagement in out-of-class activities on a daily basis; conversely, motivation linked to formal instruction could be associated with either a Current L2 Self (e.g. enjoyment of lessons at present) or Future L2 Self (e.g. attainment of a certificate in order to secure a job or study abroad in the future).

Contrary to previous research (e.g. Fryer & Roger, 2018), interview questions did not include theoretical terms such as "motivation", "Current L2 Self" and "Future L2 Self",

because it was not expected that all student-participants would be able to readily perceive such constructs. Similarly, although the present study also looked into the component of "self-discrepancy" (Higgins, 1987), participants were not directly asked to self-report discrepancy between their current and future self-state. Instead, following Al-Hoorie (2018), data regarding self-discrepancy were collected through students' descriptions of their Current and Future L2 Self, which were subsequently coded into different types of self-discrepancy (Section 4.6.3.2).

Given the study's focus on spoken DM use, motivation data were also collected with regard to L2 speaking and, in particular, students' L2 speaking experience (i.e. speaking in formal and informal contexts). Data on the L2 speaking experience were collected from all time-points, but explicit questions were only asked at Times 2, 3 and 4 (example-questions shown below). The reason for not asking direct questions at the first time-point, which occurred at the first semester, was to ensure that by the time those questions were formulated, most students, especially those at lower-level classes, had gained sufficient experience in L2 speaking in either context and hence developed views which they could share with the researcher.

> "Where do you speak in English more: in your language school, in the morning school or in your free time?" (Time 2)

> "Where do you enjoy speaking in English more: in your language school, in the morning school or in your free time? Why?" (Time 2)

> "When was one time you enjoyed speaking in English the most? Why?" (Time 3)

> "What is one thing you would do to practise speaking more?" (Time 4)

4.5.2 Procedure

Data collection followed the same procedure at each school and commenced after all signed consent forms had been collected, participants' questions had been answered and the days and times had been set for the researcher's visits. The procedure was discussed with the directors and the teachers, and it was agreed that it would cause minimum obstruction in lessons.

Three to four days were devoted for data collection from each school at each time-point. Data collection occurred either in the same week or expanded over two weeks depending on the arrangements with each school. On the first day, students participated in the speaking activities with the researcher. The activities were conducted parallel to participants' lessons; each student individually was called out of the class to a quiet room of the school, where the activities were conducted with as little disruption from the outside environment as possible. Before commencing, the student was reminded about being audio-recorded. The video for the second part of the activities was shown from the researcher's laptop, and the pictures for the third part were shown in paper photocopies. Oral performance was audio-recorded through the Voice Memos app on a smartphone device placed on the desk in full view of the participant. The total duration of the activities was 10 minutes. The student returned to their class and the next participant was called.

Each student who participated in the speaking activities on the first day was also given a paper copy of the questionnaire and was asked to complete it at home and bring it to the school the following day, as it would be needed for participation in the semi-structured interview. The completion of the questionnaire was piloted not to exceed 10 minutes. At each time-point, there was a minority of students who had not completed or forgot to bring the questionnaire when required. For those cases, the interview was postponed for a subsequent day; as explained in 4.5.1.2, the questionnaire was necessary for conducting the interviews which were retrospective.

On the second day, each student participated in the semi-structured interview. The same process was followed as with the speaking activities. Before the interview, the researcher consulted her notes from previous time-points to familiarise herself with each participant's profile, i.e. ISLL, DM use, motivation. This enabled the posing of targeted questions that tapped into each student's habits and perceptions (e.g. "Last time you mentioned X. Do you still engage in that activity? Why/Why not?"). Each participant had been asked to bring along their questionnaire which was studied briefly by the researcher before the interview commenced. The duration of each interview was approximately 15 minutes.

On the same day, students were reminded that one hour of the lesson would be audio-recorded. The researcher placed the audio-recording device on the teacher's desk and left the classroom so as to minimise any researcher effect and elicit authentic teacher-talk. At the final time-point of the study, teacher-participants were asked to provide the main

textbook used in class throughout the school year as well as any additional instructional material intended for speaking practice. After pictures were taken of all pages devoted to speaking practice and of audio-transcripts of listening comprehension exercises, the original material were returned to the teachers.

Given that the study required prolonged engagement with the same participants who were asked to provide data at every time-point, and because the researcher's frequent presence at the schools could be perceived as intrusive, it was important to establish good relations and gain trust to ensure prompt participation, completion within the planned time limits and to minimise withdrawals. This was achieved by introducing the study in an appealing manner at the introductory briefing at each school, being available to teachers, students and parents throughout the study and clarifying ethical considerations, outlined below.

4.5.3 Ethical considerations

This section provides details regarding ethical issues that needed to be accounted for in the case of research in institutional settings with human participants, most of whom were minors (under 18). The study adhered to the ethical guidelines outlined by the British Association of Applied Linguistics (BAAL, 2016).

Firstly, ethical guidelines for research with human participants specify voluntary participation and informed consent (BAAL, 2016). Upon initial contact with the school directors, teacher- and student-participants, the researcher presented the content of the study and conditions of participation, stressing the non-compulsory nature of the study. This information was provided at the first time-point in written form, in participant information leaflets and consent forms (Appendix A), which were distributed to each student and teacher-participant in Greek, as well as orally (in Greek), during the introductory briefing at each class. Despite the non-compulsory nature of the study, students might have felt they had to participate given that data collection took place inside their schools. Potential issues around power were addressed in information leaflets, where it was emphasised that non-participation in the study would not affect students' grades or their progress at school.

Student-participant information leaflets were addressed to students, outlining study objectives and details. Respecting the autonomy of students aged 13 to 17 and recognising

their capacity to consent (as advised by the Open University Human Research Ethics Committee), students were given the choice to provide parental and/or their own consent to opt in. To ensure that students understood the study, participation leaflets and consent forms were written at an age-appropriate literacy level, and students were encouraged to ask questions at any time-point. Participants were also informed of both the benefits and risks of taking part in the study. Benefits comprised opportunities for additional speaking practice, whereas a possible risk was finding the audio-recording process stressful, which could affect performance negatively.

The small number of students who did not opt in (Section 4.3.2) were given a revised form which sought their consent to audio-record one of their lessons at each time-point (Appendix A7). It was clarified that the audio-recording aimed to capture teacher-talk and not their own contributions. All non-participants gave their consent for the lesson audio-recordings both in written form at the beginning of the study and orally at subsequent time-points.

Because every class had individuals who did not volunteer, data collection was scheduled to cause minimum obstruction to the flow of lessons so as not to affect non-participants. Therefore, while student-participants were called individually outside the class to participate in speaking activities and interviews, the remaining students were expected to resume their lessons. It was also pointed out during the initial briefing that, because of the nature of the study, students who had not opted in at the first time-point would not be able to participate in later stages, in case they expressed belated interest. However, there was no such case.

A second ethical issue to address was the right to withdraw (BAAL, 2016). Every participant had the right to express withdrawal, without giving any reason, at any point up to six months from the start of their participation (i.e. up to 01/06/2019), when data collection was expected to have finished. This was made clear to participants in the participation leaflets. Multiple iterations of data collection could be overwhelming or perceived as intrusive. The right to withdraw was emphasised in order to reassure participants they were allowed change of mind and were not compelled to provide data even if they had given initial consent. The only participants who dropped out were higher-level students who discontinued their school attendance.

Each participant was also orally reminded at each time-point about the voluntary condition of participation and the right to withdraw; reminders were made in Greek before each instance of data collection, i.e. before the commencement of speaking activities, interviews, distribution of questionnaires and lesson audio-recordings.

A third ethical consideration regarded data confidentiality (BAAL, 2016). Participants were informed that besides the researcher, three external EFL experts would also have access to audio-recordings of the speaking activities and lessons (but not student interviews), in order to assist the researcher. It was also mentioned that written transcripts of speaking activities would be deposited in the university's research data repository for other researchers to use. The researcher emphasised the anonymisation of participants and schools in any written document and before sharing data with third parties. Names were digitally cut from audio-recordings and removed from transcripts of speaking activities and interviews. In written documents, schools and participants were identified by letters or numbers (e.g. School A, Teacher 1, S48[12]). Personal data (i.e. name, surname) remained confidential.

Student-participants, their parents and teacher-participants were allowed access, if requested, to a copy of the study's data management plan with details about security and storage of data during and after completion of the research. However, there was no request made. Data from the study's dropouts were not retained. Participants were allowed access to copies of their audio-recordings at the end of the study; only one teacher requested her lesson recordings.

A final ethical issue was level of deception. The main focus of the study, i.e. DM use, was not disclosed, so as to capture valid, most authentic data and to minimise panel conditioning effect. It was believed that had this information not been withheld, participants would have been more aware of their DM choices and might have acted unnaturally, producing speech that might not represent how they normally speak in English in institutional settings. Instead, in line with the BAAL (2016) guidelines and without misleading participants, the project was presented in a general way as a study on speaking in English and contact with English outside the class.

[12] Student 48.

4.6 Data processing

This section provides information regarding the preparation of data for subsequent analysis. To assist in data processing, computer files were created with audio-recordings and transcripts of speaking activities and interviews (for each student), lesson recordings (for each teacher) and pictures of pages of instructional material (for each class) from every time-point. Desk files were created for each student's completed paper questionnaires. Every digital and paper file stated the code used to identify the participant (e.g. S34, Teacher 1), the data collection stage (e.g. Time 1), class level (i.e. low, high) and school (e.g. School B). A total of 16.20 hours of speaking activities, 48.53 hours of student-interviews and 18.59 hours of lessons were recorded and transcribed[13]. Moreover, 208 questionnaires and 204 pages of instructional material were collected and processed. There were no missing data; all participants provided all data at all time-points.

4.6.1 Coding of DMs

Processing DM data was necessary in order to extract numerical values for subsequent analysis of students' DM use, teachers' DM use and DM content of instructional material. Student DM data processing was required in order to address all RQs, while processing of teacher DM data and DM data of instructional material was required in order to address RQ1a. Processing involved the identification and tally of DM types (i.e. DM range), DM tokens (i.e. overall DM frequency) and, more specifically, DM tokens that signalled a textual function (i.e. textual DM frequency), interpersonal function (i.e. interpersonal DM frequency) or textual-interpersonal function (i.e. textual-interpersonal DM frequency) in students' discourse, teachers' discourse and pages of instructional material.

Figure 4.2 presents a timeline of data processing rounds in relation to data collection stages. Processing students' and teachers' spoken discourse comprised four rounds; rounds 1 and 2, repeated during each data collection stage, and rounds 3 and 4, following data collection. Processing of instructional material occurred at rounds 3 and 4. Table 4.6 summarizes the activities undertaken during each processing round. Systematic re-visiting

[13] The figures do not include data collected from the five dropouts; although data were processed before the students withdrew from the study, they were not retained.

and processing of data helped in familiarisation with data in order to triangulate and further ensure accuracy of transcriptions, precise identification and tally of DM tokens and types, and assignment of functions.

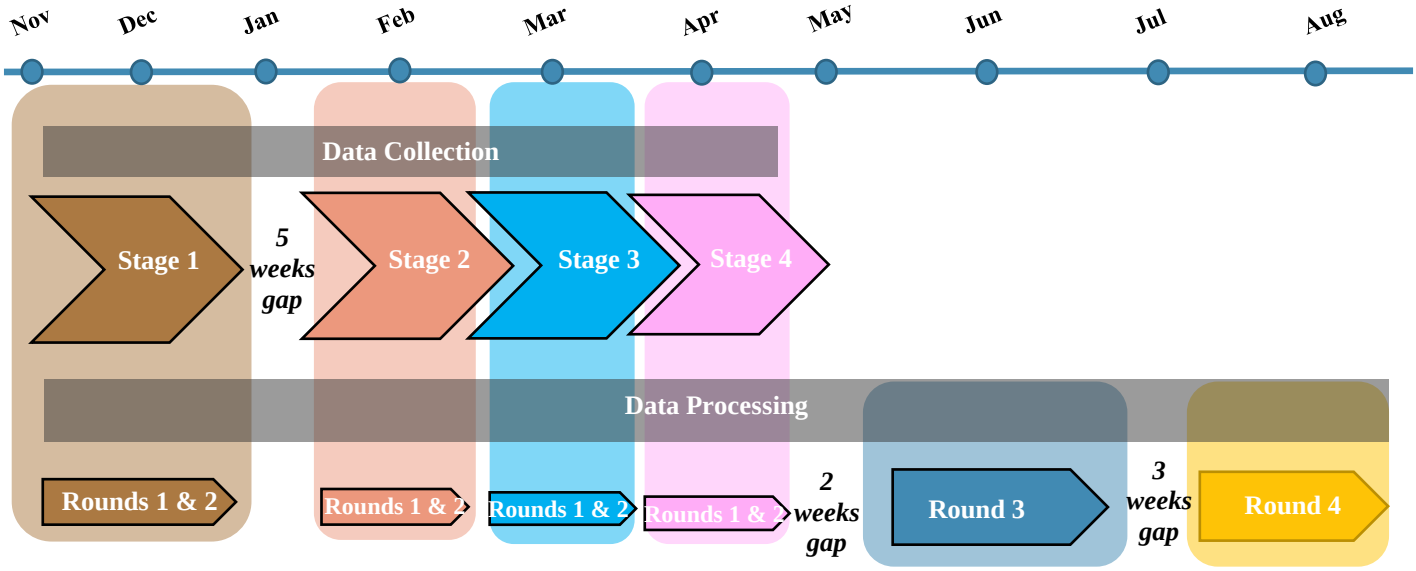


Figure 4.2 Timeline of data collection stages and DM data processing rounds.

Table 4.6 DM data processing.

Data processing round	Activity
Round 1	○ Broad transcription of student & teacher audio-recordings. ○ Identification of the 10 lexical items under examination on the transcripts.
Round 2	○ Re-visiting and editing of transcripts.
Round 3	○ Identification of DM tokens in student & teacher transcripts and in instructional material. ○ Addition of narrow transcription conventions and coding scheme in student & teacher transcripts. ○ Assignment of individual DM functions. ○ Categorisation of individual DM functions under the three functional categories: textual, interpersonal, and textual-interpersonal. ○ Norming session with 2nd coder. ○ Recoding of part of data by 2nd coder.
Round 4	○ Recoding of DM data from all sources (i.e. teachers, students, instructional material) by the researcher. ○ Tally of DM tokens and types for each participant and instructional material.

4.6.1.1 Round 1: Broad transcription

The researcher listened to and processed a total of 208 audio-recordings of students' speaking activities (52 students x 4 time-points) and 24 audio-recordings of teachers' lessons (2 teachers x 4 time-points x 2 lessons and 2 teachers x 4 time-points x 1 lesson). For Teacher 1 and Teacher 2, two of their lessons were audio-recorded each time because they taught student-participants who either belonged to a lower-level or higher-level class. Overall, 16:11:42 (M=00:04:40) hours of student discourse and 18:35:44 (M=00:46:30) hours of teacher discourse were processed.

Transforming spoken data into written form is necessary for coding and analysis (Dörnyei, 2007). Table 4.7 shows the transcription conventions for data from speaking activities. Two types of transcription conventions were followed. Upon first contact with the data (round 1), participants' discourse was transcribed following broad conventions, i.e. the transcription was a verbatim and orthographic representation of the audio file (Mehdi Riazi, 2016). A second, narrower transcription procedure was followed at round 3 for the identification of DM tokens and the assignment of DM functions; narrow conventions were added, coding paralinguistic features (e.g. surrounding sounds such as laughter) and prosodic features (e.g. emphasis of a syllable) (Mehdi Riazi, 2016). The study relied on an adaptation of conventions from the LINDSEI (2020) project, also employed in previous DM research (e.g. Buysse, 2010). Grammatical errors were not corrected ("*he have brown hair"*).

The choice of broader or narrower transcription conventions depends on the purpose and design of the study (Mehdi Riazi, 2016). A first version of transcripts which was a simpler representation of the audio-file was considered more appropriate for the scoring of students' spoken performance by two assessors (Section 4.6.2). Assessors were given transcripts with broader conventions that did not signpost the DMs nor their surrounding context to avoid creating bias and influencing scoring decisions. A second, more detailed transcription was necessary for the identification of DM tokens and the assignment of DM functions by the researcher and a second coder, as it highlighted the DM and its surrounding context (Section 4.6.1.6). Audio-recordings were transcribed manually by the researcher in Word.

Table 4.7 Transcription conventions for speaking activities.

Transcription type	Symbol	Meaning
Broad	<R>	researcher's turn starts
	<\R>	researcher's turn finishes
	<S1>	student's turn starts (the number indicates the number of the participant)
	<\S1>	student's turn finishes
	<T1>	teacher's turn starts
	<\T1>	teacher's turn finishes
	<word>	word(s) added by the researcher to anonymise data
	(word)	contextual comments added by the researcher
	eh, uh, ehm, uhm, hmm	filled pauses
	...	unfilled (empty) pause: .. (short), ... (long)
	wor-	truncated word
	(Greek)	word is uttered in Greek
	(inaudible)	inaudible because of background noise, muffled speech or faint sound
	?	question
	[...]	speech omitted by the researcher for the purpose of presenting examples in the thesis
Narrow	:	vowel lengthening (e.g. *so:*)
	TSK	vocalism (alveolar click)
	emphaSIS	intonation that shows emphasis
	(laughter)	laughing or chuckling sounds
	word	discourse unit to which a DM refers
	word	the word in bold is the DM

Once transcribed, each participant's total word count was calculated with the use of AntConc 3.5.8 software. As will be further explained in Section 4.6.1.10, the calculation of each participant's total number of words used was necessary for the calculation of their DM frequency (i.e. number of DM tokens used relative to total word count). AntConc contains the feature Word List which provides an accurate count of words and lists all different types of tokens in the transcript along with their frequencies (Xu et al., 2018). Before entering transcripts in the software, the researcher had produced a copy of every original Word transcript in which tokens that did not belong to each participant's discourse were deleted, i.e. researcher's turns during speaking activities and students' turns during teachers' lessons. Other instances belonging to transcription conventions (e.g. filled pauses) as well as words uttered in Greek were identified in Word List and subtracted from the total word count so as to retain English spoken production. Overall, 74,075 (M=356.13) words of student discourse and 92,684 (M=15,447) words of teacher discourse were transcribed.

4.6.1.2 Round 1: Identification of DM types

As discussed in Chapter 3, there exist various definitions of DMs and studies have included different items in their selection of DMs under scrutiny. Therefore, selection of DMs is prone to researcher intuition and subjectivity (Crible, 2017a). The markers under examination in the present study were: *so, well, just, like, I don't know, actually/in fact, you know, I mean, kind of/sort of,* and the category of general extenders (e.g. *and stuff, or something, and things like that)*. All instances of the 10 selected lexical items were identified and highlighted in colour on each transcript. Distinguishing between discursive uses (i.e. lexical item has DM function) and canonical uses (i.e. lexical item has non-DM function) was completed at round 3 (Section 4.6.1.5).

The criteria for including the aforementioned markers in the present study were (a) their being amongst the most commonly studied DMs in spoken learner English (Chapter 3) and (b) their use by more than one student-participant in the sample. However, certain items were not examined despite having been reviewed in previous DM literature and despite occurring in participants' discourse. For example, the following items and their pragmatic uses were not included in the present analysis: conjunctions (*and, but, because*), epistemic parentheticals (*I think, I believe, I suppose*), connectives typical of written language (*firstly, on the other hand, whereas*), response signals (*yes, yeah*), interjections (*ah, oh, okay*), filled pauses (*ehm, uh*) and adverbs (*basically, anyway*). The primary reason for excluding a marker from analysis was in order to limit the number of DMs under examination to a manageable figure which allowed a study of both breadth and depth. Secondly, according to Crible (2017a), some of the aforementioned items (e.g. interjections, filled pauses, epistemic parentheticals) do not share all characteristics of DMs as defined in her work, which the present study draws upon, and are treated as hyponyms of the broader category of pragmatic markers rather than discourse markers. Although such items can sometimes have discursive uses, and thus have been termed "borderline elements" (Crible 2017a:95), the identification of a discursive function has been deemed as complex; therefore, their inclusion would further complicate the DM token identification process (Section 3.2.1). A third reason why certain markers were excluded from the present study (e.g. *okay, basically*) was because their Greek translations are phonetically close to the English equivalents. Therefore, their use by student-participants could be the result of L1 transfer rather than L2 development. The examination of this

possibility and a contrastive study in students' L1 and L2 DM use is, however, beyond the scope of the present study. Finally, markers employed by teacher-participants or present in instructional material but not occurring in learners' discourse (e.g. *now, right*) were not analysed, given the main focus of the study on learners' DM use.

4.6.1.3 Round 2

The second round of processing comprised the re-visiting and manual editing of all student- and teacher-transcripts in order to ensure that data had been accurately transcribed during the first round. Editing included making additions, deletions, or replacements, such as where a word or phrase had been misheard and written down incorrectly.

4.6.1.4 Round 3

The third round took place after the completion of all four data collection stages. DM tokens were identified in student- and teacher-transcripts, and narrow transcription conventions and a coding scheme were added to the transcripts to assist in the assignment of DM functions based on three broad categories: textual, interpersonal and textual-interpersonal, following previous literature (Müller, 2005; Ament et al., 2018). Reliability of the coding procedure and the assignment of functions was ensured by having a second coder re-code part of student and teacher data.

DMs in instructional material were also coded. All instructional material was in written form and comprised textbooks and leaflets which had been distributed to student-participants by their teachers throughout the school year. Given the study's focus on spoken DM use, written text that was related to spoken discourse was selected for analysis. After consultation with each teacher-participant, the researcher selected for DM coding those sections that dealt with spoken language and in which, in her experience, DMs were most likely to be found (Appendix C1). It was also confirmed with the teachers that all pages had been taught to student-participants. The selected material consisted of (a) all sections in the textbook devoted to speaking practice and (b) transcripts of all listening comprehension exercises found in the textbook appendices, as they portrayed spoken discourse. The selected sections (210 pages in total) were photographed, as the original material had to be returned to the schools. Of those, 139 pages in total contained DMs

(Appendix F, Table 18). The researcher was only allowed access to the transcript and not the original audio of the listening comprehension exercises in the textbooks; however, it was assumed that the transcript and the audio matched. All instances of the 10 lexical items under investigation were identified on the photographs and underlined. Then, data were entered in Excel to be coded manually in the following way. For tokens that appeared in full sentences (i.e. in context), the sentence was typed manually on Excel. For tokens that appeared in word lists (and thus, out of context), the total number of tokens of each of the 10 items was entered. Data were entered and coded for each textbook, for each class-level, for each school. The process of the identification of DM tokens (i.e. distinguishing between the discursive and the canonical use) and assignment of DM functions is detailed in the following sections.

4.6.1.5 Round 3: Identification of DM tokens

A total of 6,629 tokens of the ten lexical items under examination were identified in the dataset. Table 4.8 shows the total number of tokens used as DMs, tokens used canonically (i.e. non-DMs), and unclear tokens where it was not possible to distinguish between discursive/pragmatic and canonical functions, in students' discourse, teachers' discourse and in instructional material (see Appendix C2 for each DM separately). As discussed in Section 3.1, the following prescriptive criteria have been amongst the most commonly used to define DMs: syntactic optionality, procedural meaning and fulfilment of non-propositional functions, i.e. textual, interpersonal (Aijmer, 2002; Müller, 2005). Following Müller (2005), syntactic optionality was the primary criterion for identifying a DM token in the present study and hence distinguishing between a canonical and discursive use of an item. All aforementioned criteria were taken into consideration in cases where an item was syntactically optional also in its canonical use (e.g. the adverb *actually*).

Table 4.8 Tokens with discursive/pragmatic, canonical and unclear functions in the datasets.

Dataset	N (%) of tokens used as DMs	N (%) of tokens used canonically	N (%) of unclear tokens	Total
Students	1,206 (57.6)	864 (41.3)	24 (1.1)	**2,094** (100.0)
Teachers	1,450 (61.7)	863 (36.7)	38 (1.6)	**2,351** (100.0)
Instructional material	1,151 (52.7)	1,010 (46.2)	23 (1.1)	**2,184** (100.0)
Total	**3,807**	**2,737**	**85**	**6,629**

For 24 (1.1%) tokens in student data, 38 (1.6%) in teacher data and 23 (1.1%) in instructional material, the identification of discursive/pragmatic or canonical functions could not be carried out due to lack of sufficient context around the DM. This was caused, for example, due to truncation of the segment following the item (in student and teacher discourse), or because the item appeared in word lists (in instructional material). Such instances were categorised under "unclear" (e.g. excerpt 1). All unclear tokens were removed from subsequent data analysis.

(1) <S13> [...] and eh that's how she shows her abilities **so** she- it's really nice <\S13>

To provide an example of how the distinction was made between discursive/pragmatic and canonical uses, excerpts (2) and (3) illustrate the item *you know* as a DM and in its canonical use, respectively. In (2), *you know* was identified as a DM mainly because the item is optional; if *you know* was removed, that would not alter the grammaticality of the utterance ("*I was going to go out for Carnival.. but I have some ehm very important games*"). Moreover, its meaning is procedural rather than conceptual: *you know* possibly signals to the hearer that they might be able to relate to what was said (Beeching, 2016). In other words, *you know* does not add to the propositional meaning of the utterance but rather fulfils a communicative function involving the hearer in the construction of the message (Buysse, 2017).

(2) <R> are you going to do anything special this weekend? <\R>
<S1> ehm to tell you the truth I'm not.. because ehm I was going to go out for Carnival **you know**.. but I have some ehm very important games [...] <\S1>

In (3), *you know* was not identified as a DM. The item appears inside the relative clause construction "*that you know"* which is attached to the preceding noun *no one*. This means that the item is syntactically required; if it was removed, the remaining utterance would be ungrammatical ("*there is no one that and it's better").

(3) <S16> [...] it's not bad at home too but I think it's better at the cinema because no one else.. there is no one that you know and it's better <\S16>

4.6.1.6 Round 3: Narrow transcription

Narrow transcription conventions (Table 4.7) were added to each student- and teacher-transcript in the surrounding context of each of the 10 items under examination. In combination with the prescriptive criteria presented above, certain cues assisted in distinguishing between canonical and discursive/pragmatic uses of a lexical item (i.e. identification of a DM token), and subsequently, in the assignment of a specific DM function (Section 4.6.1.7). Those cues were the prosodic characteristics of the marker and its surrounding context (e.g. vocalisms, pauses, truncations, emphasis) as well as the position of the token in the discourse unit, i.e. left or right periphery or medial position (Aijmer, 2016).

Identifying and underlining the discourse unit which each token referred to, was a necessary step before assigning a DM function. Drawing on previous literature (Aijmer, 2016), the token could appear in the right periphery (i.e. the token took in its scope the preceding unit), in the left periphery (i.e. the token took in its scope the following unit) or in medial position (i.e. the token appeared inside the unit). The discourse unit which each token related to could be, for example, a verb phrase, noun phrase, or an entire clause. In contrast to written discourse, where the limits of a syntactic unit are clearly defined with the aid of grammatical punctuation (commas, full stops), boundaries of a spoken discourse unit are not always clear. In this study, the boundaries of a discourse unit were clarified with the help of transcription conventions that coded prosodic characteristics (vocalisms, pauses, truncations) and by resorting to the audio-recording, which aided in identifying connected speech and deciphering changes in the speaker's intonation (falling or rising). The following examples illustrate the different positions of *actually* in relation to the discourse unit.

In (4), the speaker's flow of speech ("*I can see three men playing a video games*") is interrupted as signalled by the filled pause *eh.* After pausing, the speaker introduces *actually* emphasizing its first syllable, and adding the information "*a football match"*. The noun phrase "*a football match"* was identified as the discourse unit which *actually* takes in its scope. The marker appears to the left of the discourse unit (i.e. is in the left periphery), and the boundaries of the discourse unit appear to be defined by the two filled pauses *eh* preceding and following the unit.

(4) <S12> [...] I can see three men playing a video games eh **Actually**: a football match eh while in the: in the other picture [...] <\S12>

In (5), the clause "*I was little"* was identified as the discourse unit which *actually* refers to. Identifying the discourse unit was less straightforward in this example as there were no clear indications (e.g. pauses) defining both boundaries of the unit; although there was clear indication defining its beginning (i.e. short unfilled pause), there were no clear indications defining its end. The researcher resorted to the audio-recording; *actually* appeared more attached to the preceding unit ("*I was little"*) which it followed without any interruption, and less attached to the following unit ("*I was five years old"*). It was therefore concluded that the marker appeared in the right periphery of "*I was little"* rather than in the left periphery of "*I was five years old"*.

(5) <S26> [...] I was so scared.. I was little **actually** I was five years old [...] <\S26>

In (6), *actually* is inside the scope of the discourse unit as it occurs between the verb *was* and its complement *addicted*. Following Taglicht (2001) and Aijmer (2002), the use of *actually* in excerpts (4) and (5) was identified as discursive/pragmatic, whereas *actually* in medial position in excerpt (6) was identified as canonical: the marker functioned as an emphasizing adverb/intensifier and not as a DM.

(6) <S10> [...] I don't really know why I was **actually** addicted eh <\S10>

The simple coding scheme (i.e. underlining, DM in bold) and the manageable size of the data did not require the use of a digital annotation tool for the identification and tally of DM tokens. Manual coding was preferred, as elsewhere (e.g. Neary-Sundquist, 2014), which also enabled closer familiarisation with each transcript and participants' discourse.

Although the coding of prosodic information and the identification of the discourse unit can assist in the assignment of functions, the researcher's interpretation is based on their perception and subjectivity (Crible, 2017a). In this study, subjectivity was attended to by referring to existing functional taxonomies in the literature, having part of the data coded by a second coder (Section 4.6.1.9) and self-recoding part of the data (Section 4.6.1.10)

4.6.1.7 Round 3: Assignment of individual functions

The individual function of each DM token was identified in order to subsequently categorise tokens into one of the three broader categories of textual, interpersonal, and

textual-interpersonal functions (see Appendix C3 for full list of DM types, their functions, description of function and examples from the present dataset). A top-down, literature-driven approach was primarily adopted, where tokens were assigned a function based on taxonomies available in previous literature.

Excerpts (7) and (8) are presented to illustrate how the addition of narrow transcription conventions assisted in the coding process. In (7), *I mean* appears in the left periphery of the discourse unit. *I mean* was assigned the function of explication (Beeching, 2016), as the marker appeared to introduce an explication of what was said before, i.e. the phrase *it depends*.

(7) <R> do you like going out or staying at home? <\R>
<S12> eh: well I think it depends.. **I mean** in the summer especially I really like going out.. especially with my friends <\S12>

In (8), *I mean* seems to signal a different function. S12 towards the end of her answer encounters some difficulties in constructing her message: the short silent pause after *you need* followed by a filled pause *hmm*, the alveolar click *TSK*, the repetition of the pronoun *I* and the truncation *reall-* signify the speaker's dysfluency. The characteristics of the context surrounding *I mean* suggest that the DM signals the function of self-repair (Beeching, 2016): the marker edits spontaneous speech as it unfolds rather than introducing an explication, specification, or elaboration.

(8) <S12> [...] a friend can hmm *TSK* I-**I mean** it's reall- it's much better to be with a friend <\S12>

Because previous functional taxonomies are based on the particularities of each study and each researcher's subjective interpretations, studies have identified and classified functions differently, sometimes resulting in lack of consensus. In this study, literature-driven assignment of functions was conducted with critical evaluation of each source. The literature-driven approach was supplemented by a bottom-up, data-driven process, revealing instances where a token appeared to signal a function not found in existing taxonomies but particular to the current dataset. Seven functions particular to the present data were identified: four encountered in student data (two for *well*, one for *so,* and one for general extenders) and three functions encountered in teacher data (two for *so,* one for *sort of*).

Most discursive/pragmatic tokens were assigned one, individual function (n=3,579, 94.0%). There was also a small number of tokens that appeared to signal two functions. In those cases, the researcher either merged both functions into a new function (n=220, 5.8%), if such use was identified in the discourse of more than one participant, or categorised the token under "ambiguous function" (n=8, 0.2%). Merging functions resulted in four new functions that were particular to this study's student data (two for *well*, one for *so*, and one for general extenders, Appendix C3). In the case of a token that appeared to signal two functions but where such use was evident in the discourse of only one participant, the token was categorised under ambiguous examples. Unclear instances where it was impossible to assign a function due to lack of or unclear surrounding context were excluded from subsequent analysis (see Appendix C4 for the total number of tokens that were assigned one individual function, tokens with merged functions, and tokens that were ambiguous, in students' discourse, teachers' discourse and in instructional material).

The assignment of functions in the audio transcripts of instructional material was not problematic, despite the absence of transcription conventions. It is often the case that audio transcripts in textbooks represent pre-recorded, scripted speech which usually lacks characteristics found in spontaneous spoken communication such as pauses, hesitations or truncations (Tomlinson & Masuhara, 2013). The position of the DMs is clearly indicated; the beginning and end of speakers' utterances are marked by grammatical punctuation and capitalisation (Figure 4.3)[14]. Therefore, the context surrounding a token was straightforward and did not impede the assignment of DM functions, except for when the token appeared out of context (Figure 4.4). As previously explained, those instances were categorised under "unclear" and were removed from subsequent analysis.

[14] DM tokens were highlighted on the picture by the researcher.

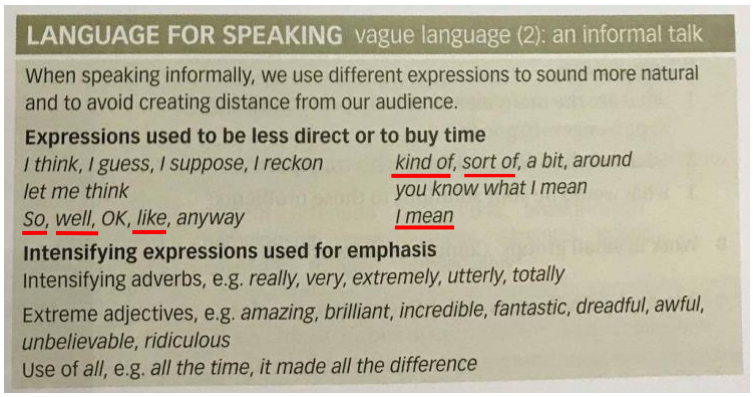
10.3

I = Interviewer M = Mike S = Samia

I: Today, as part of our series on successful young entrepreneurs, I'm talking to Mike Lemmington, who started his own gelato business, and Samia Johnson, who runs a marketing agency. Mike, you first. What made you start your own business?

M: Well, I've always loved desserts. As a child, I would ask my parents if I could have two desserts rather than a main course! Several years ago, I considered opening a café, but I wasn't sure about my abilities to make a success of it so soon after completing culinary school. I thought it would be more sensible to work as a *sous* pastry chef for some years. As it happens, six months later the restaurant I was working for closed and I lost my job. That same day a friend forwarded me information about the Gelato University in Bologna in Italy. I applied and, during the three months I was there, I couldn't help but find the Italians' enthusiasm and passion for gelato contagious, so when I came back to the UK I set up my own café, called it Mikalatto and began selling my own gelatos there.

Figure 4.3 DM tokens in textbook's audio transcript (source: "Gold Experience", Ball, Hartley & Edwards, 2018:126).



LANGUAGE FOR SPEAKING vague language (2): an informal talk

When speaking informally, we use different expressions to sound more natural and to avoid creating distance from our audience.

Expressions used to be less direct or to buy time

I think, I guess, I suppose, I reckon
let me think
So, well, OK, like, anyway
kind of, sort of, a bit, around
you know what I mean
I mean

Intensifying expressions used for emphasis

Intensifying adverbs, e.g. *really, very, extremely, utterly, totally*

Extreme adjectives, e.g. *amazing, brilliant, incredible, fantastic, dreadful, awful, unbelievable, ridiculous*

Use of *all*, e.g. *all the time, it made all the difference*

Figure 4.4 DM tokens in textbook section devoted to speaking practice (source: "Navigate", Bartram & Pickering, 2016:23).

4.6.1.8 Round 3: Assignment of broad functional categories

After the assignment of individual functions, all DM tokens except for those whose function was unclear, were subsequently categorised into three functional categories: textual, interpersonal and textual-interpersonal (i.e. combination of a textual and an interpersonal function as will be explained later in this section). A two-fold classification of DM functions into textual and interpersonal has been adopted in previous studies

(Aijmer, 2002; Müller, 2005[15]; Ament et al., 2018). Although a functional category that takes into account tokens which simultaneously index textual and interpersonal functions has not been found in previous literature, it has been suggested that tokens of certain DMs combine both elements (e.g. *you know* in Buysse, 2017). A functional category of textual-interpersonal was hence included in the present study to account for such tokens, as they were encountered in the dataset (see Appendix C5 for the number and percentage of tokens assigned to each of the three functional categories in students' discourse, teachers' discourse and instructional material).

A token signalled a textual function when its role was to organise the discourse, such as connecting a preceding or current segment in the utterance with the current or following segment, contributing to the coherence of the discourse (Schiffrin, 1987). Following the classification by Buysse (2012), in (9), *so* was assigned the textual function of introducing a section of the discourse. The student used *so* (preceded by *okay*) to provide a response to the researcher. The token was interpreted as functioning at textual level considering that it was used as a discourse-organising device: S11 used the marker to open her turn and initiate her discourse.

(9) <R> compare them and then tell me why you think these people enjoy these activities <\R>
<S11> okay **so** in the first picture.. I can see three guys uh grown men actually.. who are playing a computer game on their ah iMac.. I think it's football? <\S11>

A function was categorised as interpersonal when it signalled the speaker's intention to convey a message in a certain way to the hearer (Fraser, 1999; Aijmer, 2002). Drawing on Buysse (2015) and Müller (2005), in (10), *so* was assigned the interpersonal function of prompt. S2 used the marker with a falling intonation and followed it with an empty pause without explicitly uttering her inferred conclusion, which could possibly have been "so it's good for our health". Because the inferred conclusion appears self-explanatory, given the student's previous contribution "*but it's good for health for our health because we keep fit*", the use of *so* possibly cues to the hearer to "recover the implied message" (Buysse, 2015:1769) and take over the floor; therefore, *so* was interpreted as functioning at interpersonal level.

(10) <S2> [...] but it's good for health for our health because we keep fit <\S2>

[15] Müller (2005:3) uses the term "interactional" instead of "interpersonal".

<R> exactly <\R>

<S2> we are walking **so:** ... <\S2>

<R> exactly.. it's also good for us you're right <\R>

Tokens which were categorised as textual-interpersonal were believed to index two functions simultaneously: one at textual level and one at interpersonal level. An example is the function 'end of sequence/turn' signalled by *so*, which was encountered in the student dataset and was particular to the present data. In (11), S3 was asked to talk about her best friend. S3 used *so* followed by *yes* at the end of her response. At first sight, the marker appears to be indexing a function similar to that of prompt (interpersonal), cuing to the researcher-interlocutor that "a turn-shift is expected" (Buysse, 2012:1769). However, there is one difference; although *so*-prompt was usually employed with a falling intonation[16] as well as prolongation of the vowel and a following short or long unfilled pause (e.g. *so*:..), there was no prolongation of vowel in *so*-'end of turn/sequence', which was immediately preceded by *yes.* Apart from indexing an interpersonal function, the marker also appears to be signalling a second function at textual level: *so* is used to indicate the termination of the student's contribution and the rounding-off of her response.

(11) <R> nice.. I want you to talk to me about your best friend.. what he or she looks like and some things about his or her personality <\R>

<S3> okay eh she eh she is blond and she is as tall as I am.. she doesn't wear glasses and her personality I think that eh.. she is very eh happy person generally and.. but she gets nervous very often eh but eh she is very kind and very good student eh **so** yes <\S6>

<R> and have you been friends for a long time? </R>

In the present data, *so* was used in combination with *yes*, *yeah*, *this*, *that*, to possibly index that a student's turn or a sequence in their response had come to an end (textual function) and to cue to the interlocutor to take the floor (interpersonal function). In such instances, the token did not appear to refer to the immediately preceding discourse unit but took in its scope the entire student's turn that preceded it.

4.6.1.9 Round 3: Second coder and inter-coder reliability

[16] The audio-recordings were consulted in order to disambiguate between '*so*-prompt' and '*so*-end of turn/sequence'.

Establishing inter-coder reliability was required in order to test the robustness of the DM token identification procedure and assignment of functions for subsequent data analysis (Section 4.7). An experienced Greek EFL teacher, familiar with the research topic, volunteered as a second coder. Both participated in two three-hour norming sessions working on the transcripts of ten students and one teacher. The researcher and second coder agreed on how to (a) distinguish between lexical items with discursive/pragmatic and canonical use, (b) identify DM functions based on existing taxonomies and (c) identify tokens with more than one function, ambiguous or unclear tokens. The transcripts were read through and the audio-recordings were listened to when necessary[17]. A thorough examination of the eleven transcripts and the existing functional taxonomies during the norming session was considered to generate high inter-coder reliability.

After the norming session, the researcher and the second coder worked individually on a subset of data. The selected amount corresponded to 22% of student data (12 students) and 13% of teacher data (2 teachers) randomly chosen from the sample using the RAND formula in Excel. The percentage of data for double coding was decided upon after referring to previous literature (Loewen & Plonsky, 2015). The second coder was given a total of 50 audio-recordings with their transcripts to identify and count all DM tokens in participants' discourse and assign DM functions. Documents with narrower transcription conventions were provided considering that a more comprehensive representation of prosodic and paralinguistic cues would be of further assistance to the coding procedure. A copy of existing functional taxonomies was provided as an aid for the assignment of functions.

Measures that assess two coders' consistency and correct for chance agreement are the Intraclass Correlation Coefficient (ICC) for continuous data, and Cohen's Kappa for nominal data (Meyers et al., 2013). For the coding process, the number of DM tokens was treated as continuous. Data regarding DM functions were treated as nominal: when both coders agreed, i.e. had assigned the same function to a token, that was coded as 1 for researcher and 1 for the second coder. When they disagreed, i.e. had assigned different functions to a token, that was coded as 1 for the researcher and 2 for the second coder. Previous studies have calculated inter-coder and intra-coder reliability by computing simple percentages of agreement (e.g. Müller, 2005; Buysse, 2017). However, using

[17] In agreement with the ethical considerations of the study, the second coder was given access only to anonymised transcripts and audio-recordings.

percentages of agreement does not correct for agreement that is based on chance (Loewen & Plonsky, 2015).

It was agreed that in the case of considerable divergence between the researcher's and the second coder's decisions, the latter would be asked to code a bigger proportion of the data. That was not required, as acceptable agreement was reached. The ICC for DM tokens yielded values of .961 for student data and .974 for teacher data; Cohen's Kappa for DM functions yielded values of .912 for student data and .901 for teacher data. The results indicated high inter-coder reliability. An ICC value of .70 or higher is desirable, and a Cohen's Kappa value close to 1.00 indicates perfect agreement (Meyers et al., 2013). Only 13 tokens required further tuning as different functions had been assigned by each coder. Disagreements were resolved after discussion and reference to the existing literature. Because of time constraints, DM data from instructional material were not coded by the second coder, but re-coded by the researcher (round 4).

4.6.1.10 Round 4

The final round of data processing comprised the re-coding of part of the data by the researcher in order to test her consistency across time regarding DM coding. Similar to inter-coder reliability, establishing intra-coder reliability was a prerequisite before initiating data analysis. The researcher recoded 24% of student data (10 students), 34% of teacher data (2 teachers) and 30% of data in instructional material, following recommendations in the literature (Mehdi Riazi, 2016). Different data were re-coded from that which had been double coded by the second coder, in order to cover a wide range of the dataset. The decision to allow a three-week gap between rounds 3 and 4 for reliable re-coding was informed by previous research (e.g. 1 to 3 weeks in Müller, 2005; 2 weeks in Lim, 2018). Intra-coder reliability was assessed through calculation of the ICC and Cohen's Kappa. ICC was .911 and Cohen's Kappa was .983, indicating that high intra-coder consistency was achieved. Discrepancies were resolved after reference to the existing literature.

The final step in data processing was the tally of DM tokens and types used by student- and teacher-participants, and present in instructional material. For every student, teacher and instructional material the following information from each time-point was assembled:

total number and list of DM types, DM tokens, textual DM tokens, interpersonal DM tokens, and textual-interpersonal DM tokens.

Following the typical procedure employed in DM research (e.g. Buysse, 2012; Ament et al., 2018), raw counts for overall DM frequency and the three categories of frequency (textual, interpersonal, textual-interpersonal) in student- and teacher-data were subsequently transformed into relative values. Raw counts (i.e. absolute frequency) constitute the total number of DM tokens in each participant's data, whereas relative values (i.e. relative frequency) constitute the number of DM tokens relative to the total number of words. Transformation of DM frequency from raw to relative values enables comparability of the data within the same study and between studies due to differences in oral data sample sizes. Each participant's relative frequency values were computed by dividing the occurrences of DM tokens in their discourse by the total number of words they uttered at the respective time-point. That number was then multiplied by a normalisation factor; in this study it was 1000 due to small data size. This procedure was only followed for the aspects of DM frequency but not DM range, given that the study only focused on a small number of certain DMs (similar to Ament et al., 2018). For the tally of DMs in instructional material, it was not possible to accurately calculate the total number of words, as the material was not provided in digitalised form; hence, only absolute values were calculated.

4.6.2 Scoring of spoken proficiency

This section provides details about the scoring procedure of student-participants' speaking performance and the establishing of scoring reliability, prior to the analysis of student's spoken proficiency. Spoken proficiency was operationalised as scores student-participants achieved in the speaking activities with the researcher.

Upon completion of data collection, two experienced IELTS assessors based in Greece were hired to assess students' spoken performance and provide scores using the IELTS speaking test band descriptors[18]. The IELTS bands cover a 1-9 scale and scoring is based on four criteria, as defined in Section 4.2.2: (a) fluency and coherence, (b) lexical resource,

[18] Public version available at: https://www.ielts.org/-/media/pdfs/speaking-band-descriptors.ashx?la=en

(c) grammatical range and accuracy and (d) pronunciation. IELTS grades align with the CEFR levels (Figure 4.5).

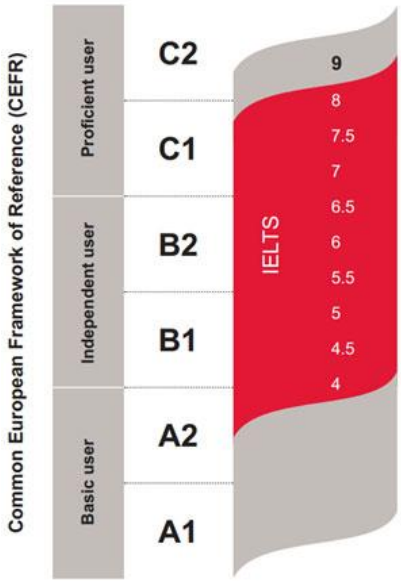


Figure 4.5 IELTS and CEFR levels[19].

The reason for choosing the IELTS rubric was that, compared to alternative rating scales (e.g. Cambridge Assessment Scale for Speaking, 2011; ECPE Speaking Rating Scale, 2019), IELTS criteria descriptors are not aimed exclusively at a certain CEFR level but correspond to the whole range, from 1 (below A1 level) to 9 (C2 level). Given that student-participants were recruited from both lower- and higher-level classes, using a rubric that was not targeted to a particular level was more suitable. Moreover, the validity of the IELTS band descriptors for speaking has been confirmed by previous research (Brown, 2006; Seedhouse et al., 2014).

Before assigning scores and in order to ensure inter-rater reliability, the two IELTS assessors participated in a three-hour norming session. The assessors worked together in the presence of the researcher on the seven audio-recordings and transcripts from the piloting stage of the study[20]. The researcher prompted the assessors to (a) discuss the scoring procedure with reference to the IELTS descriptors, (b) read the transcripts while listening to each audio-recording and (c) compare scores. Divergence in scoring was talked

[19] Source: https://www.ielts.org/-/media/pdfs/comparing-ielts-and-cefr.ashx
[20] In agreement with the ethical considerations of the study, the two assessors were given access to anonymised transcripts and audio-recordings.

through until consensus was reached and consistency in the rating was ensured. Moreover, the assessors agreed on providing one-sentence comments that summarised each participant's performance. During the norming session, the researcher did not comment upon the assessors' decisions so as not to influence their judgments. By the end of the norming session, it appeared that both assessors had reached an agreement on their interpretation and application of the IELTS bands and criteria.

Each assessor worked individually on the scoring of 208 audio-recordings with transcripts over one month (52 participants x 4 data collection stages). Assessors were given the audio-recordings and transcripts in random order and not based on each time-point or participant. This was believed to minimise assessor's effect due to predispositions, such as a possible expectation that an individual's performance would improve over time. Transcripts with broad transcription conventions that did not signpost DM tokens were provided to avoid biasing assessors' decisions. The study's focus on DMs was concealed from the assessors throughout the norming session and scoring period so as to avoid the possibility of that particular feature influencing their scoring. It must be noted that although the criterion of fluency and coherence in the IELTS Speaking Band Descriptors (2021:1) refers to the use of DMs (e.g. "uses a range of connectives and discourse markers with some flexibility"), the researcher avoided directing attention to that feature during norming session and no particular DM definition was provided.

Using the IELTS speaking assessment rubric, each assessor provided one global score, four independent scores for each criterion (fluency and coherence, lexical resource, grammatical range and accuracy, and pronunciation), as well as a short, general comment for each participant for each time-point. Scores ranged from 5.00 to 9.00 and took half or round values as is typical in IELTS scoring. Before the analysis of the speaking scores, it was important to ensure consistency between assessors (Weir, 2005). The measures used were Cronbach's Alpha, which assesses the internal consistency of the scores, and the ICC, which assesses the proportion of total variance that is a result of differences between participants and not raters (Meyers et al., 2013). Cronbach's Alpha yielded a coefficient of .911 and the ICC yielded a value of .902. A correlation above 0.9 and close to 1.0 indicates almost perfect agreement between the assessors, ensuring inter-reliability (Weir, 2005). After establishing reliability for the data, mean scores for each participant were derived from the two sets of scores provided by the two assessors. Each participant's mean speaking scores at each time-point was used as the indicator of their spoken proficiency at the respective time-point.

4.6.3 Processing data on ISLL and motivation

Because collected data for ISLL and motivation were qualitative, data processing was necessary in order to extract numerical values for subsequent quantitative analysis (Section 4.7). Quantifying or "quantitizing" data (Dörnyei, 2007:269) is considered common practice in mixed methods research. Data processing for the independent variables of ISLL and motivation was conducted through thematic qualitative text analysis (Kuckartz, 2014) and the resulting categories were then assigned numerical codes. The overall process of thematic qualitative text analysis is explained below and the processing of data pertaining to each of the two variables is described in detail in subsequent sections. The NVivo software (version 11.4.3) was used to assist in the process.

As suggested by van Nes et al. (2010), qualitative analysis was carried out using the original wording of interview data (i.e. Greek) to ensure that the underlying meaning of participants' contributions was interpreted correctly. Main topic categories and sub-categories were developed deductively based on the literature and the research questions. An inductive approach was also followed as new topic categories were discovered through reading the transcripts. The next step comprised the assigning of text passages to categories and sub-categories arrived at deductively or inductively, which were all then translated into English. Extra care was taken in the choice of English wording that best reflected the intended Greek meaning, especially for certain metaphors and teen slang that did not map directly from one language onto another. Accurate translation was attempted with the help of dictionaries and seeking the opinion of competent Greek speakers of English to discuss best wording choices.

4.6.3.1 ISLL

Data regarding ISLL were coded and quantified for statistical analysis, based on the procedure detailed in this section. Students' responses to the questionnaire at every time-point were studied alongside their responses to the corresponding interview in order to triangulate and merge data regarding the different out-of-class L2 activities.

For every informal L2 activity the following information was coded: (a) the skill practised during the activity, (b) purpose for engaging in the activity, (c) frequency of performing the activity and (d) medium/source through which the activity was carried out. This information was coded both for the activities that had already been outlined in the questionnaire as well as any additional activity mentioned by the participant. However, only those activities included in the questionnaire and further enquired about in the interviews were included in inferential statistical analysis to ensure comparability of data among participants and time-points in statistical analysis[21]. The results for any additional activity mentioned by participants were only used in descriptive analysis.

The coding of language skills was based on the traditional model of four skills: speaking, writing, listening/watching[22] and reading (Council of Europe, 2001). However, the overlap of skills within one activity should be acknowledged. For example, the activity of online chatting (by writing) combines writing and reading (reading the messages of the sender in order to respond); or the activity of watching captioned TV combines listening and reading. Given the issues involved in distinguishing between the different skills and the debate around this (Council of Europe, 2018), the study also considered the more recent and updated organisation into modes of communication, as previously mentioned: Reception, Production and Interaction (Council of Europe, 2018). The two categorisations (i.e. into four language skills and into modes of communication) were combined during coding. For example, online chatting was coded as a writing activity involving written interaction, whereas watching captioned TV was coded as a listening/watching activity involving reception.

Data on the aspect of "purpose" were coded based on whether the activity was performed for leisure, homework or for both leisure and homework purposes. This threefold distinction was already included as questionnaire items. For data collected through interviews, deductive coding was used.

In terms of purpose, an activity was coded as "only for leisure" if the student's primary reason for engaging in it was for reasons such as to communicate, entertain themselves, relax or seek information, as suggested by Sockett (2014). Although language learning

[21] The fact that a certain additional activity was mentioned only by some students, did not mean that other students, who did not mention the particular activity, did not actually engage in it.
[22] Following Sockett (2014) and for descriptive purposes, L2 listening and L2 watching were studied together.

outcomes were acknowledged by students, language learning was not the primary reason for performing the activity (e.g. S52: "*I play* [digital games] *for fun but okay there are times when I've learned new words"*, Time 1).

An activity was coded as "only for homework" if:

> (a) it was assigned by the student's teacher as official homework (e.g. writing an essay that would be subsequently corrected by the teacher),
>
> (b) was initiated by the student but was considered formal practice for exam preparation (e.g. practising speaking for the upcoming exams through textbook exercises),
>
> (c) was informally suggested by the teacher and, although not assigned as official homework, was considered by the student as formal learning practice (e.g. listening to a BBC podcast).

Activities that fell under the first category of "official homework" (e.g. writing assignments, reading comprehension exercises, home tests) were excluded from subsequent analysis, because teacher-controlled assignments and projects do not form part of the conceptualisations of ISLL which this study draws upon.

An activity was coded as "both for leisure and homework" purposes if the student reported engaging both for leisure and formal learning practice; that is, with the explicit aim to practise aspects of the language while entertaining themselves or seeking information (e.g. S18: "*It's a series of videos on YouTube that <teacher's name> had suggested, TED talks, because it is good practise for listening.* [...] *I also do it for fun because I watch things that interest me and learn about the economy*", Time 1).

Data on "frequency" were coded based on whether the activity was performed on a frequent basis, on occasion or was never performed by the participant. This threefold distinction (i.e. frequent, on occasion, never) was arrived at both deductively and inductively. Firstly, as explained in Section 4.5.1.2, it was believed that asking participants to provide more exact frequency and time estimates could result in unreliable data. Secondly, details in the data pointed towards the three frequency categories. Engagement in an activity was coded as "frequent" if the participant asserted that it was typical of their

ISLL. Items that were ticked on the questionnaire were considered to indicate frequent engagement, unless otherwise stated by the participant. Although not explicitly asked so as to avoid inaccurate estimates, some participants gave further details, such as the number of times they engaged in the activity during the week or during a day.

Engagement in an activity was coded as "on occasion", if the participant stated that it was not typical of their ISLL. Cues from the context in the interviews that assisted in the coding of engagement "on occasion" constituted wording that indicated occasional practice, such as "*I remember once when*". Engagement "on occasion" was also coded for activities in which students engaged due to a particular event at the respective time-point (e.g. trip abroad, school project). If a participant had not ticked an activity in the questionnaire and/or subsequently reported that they had not engaged in it during the respective time-point, it was coded as "never". The medium or source through which each activity was performed was also coded based on whether it was carried out on a smartphone or through the use of other sources (e.g. computer, traditional TV/radio).

When all information was coded for every activity for every student for every time-point, a final list was devised for the full sample of all identified activities depicted by purpose (e.g. speaking only for homework, listening to songs only for leisure). The list of activities was created based on common patterns revealed in the data. For example, it was found that all students who had reported chatting online (by writing) to L1/L2 others did so only for leisure. Therefore, the resulting activity was "chatting online (by writing) to L1/L2 others only for leisure".

At the final step, activities were entered into the statistical software platform SPSS as ordinal variables: for every student at each time-point, not engaging in an activity was coded using the value 0, engagement in the activity on occasion was coded using the value 1 and engagement in the activity on a frequent basis was coded using the value 2. For activities in which no student was found to engage on occasion, these were entered as nominal variables: not engaging in an activity was coded using the value 0 and engaging in the activity on a frequent basis was coded using the value 1.

4.6.3.2 Motivation

Data of each participant from each time-point were firstly coded from responses to interview questions specifically about motivation. The entire interview transcript of each participant from each time-point was read through to identify further instances where motivational factors were mentioned. Because the study drew on two motivational frameworks (L2MSS and SDT), the deductive approach was primarily chosen as constructs of each framework constituted pre-determined categories. However, as will be explained below, inductive coding was also used for types of motivation that were particular to the present data.

Figure 4.6 summarises the 5-step coding process for data on motivation. Data were coded five times in order to examine the factor of motivation from various perspectives, addressing all constructs that this study drew upon to answer the RQs. In this five-step process, data were coded on different categories: (1) the L2MSS components of Current L2 Self and Future L2 Self, (2) the different types of SDT motivations that described either self-state, (3) categories of self-discrepancy, (4) mentioning or no mentioning of the speaking skill (i.e. whether participants referred to speaking in English or only mentioned other aspects of language use such as reading or writing), and (5) the two contexts of the L2 Learning/Speaking Experience (formal, informal). Multiple coding of the same text passage is in line with the coding process described by Kuckartz (2014) whereby the same data can be assigned to multiple categories.

This section will present in detail the first three steps of the coding process, whereby qualitative data on motivation were coded in order to extract numerical values to use in subsequent statistical analysis (Section 4.7.1). Because data from the final two steps of coding were only analysed qualitatively, these final two steps will be described further in Section 4.7.2.

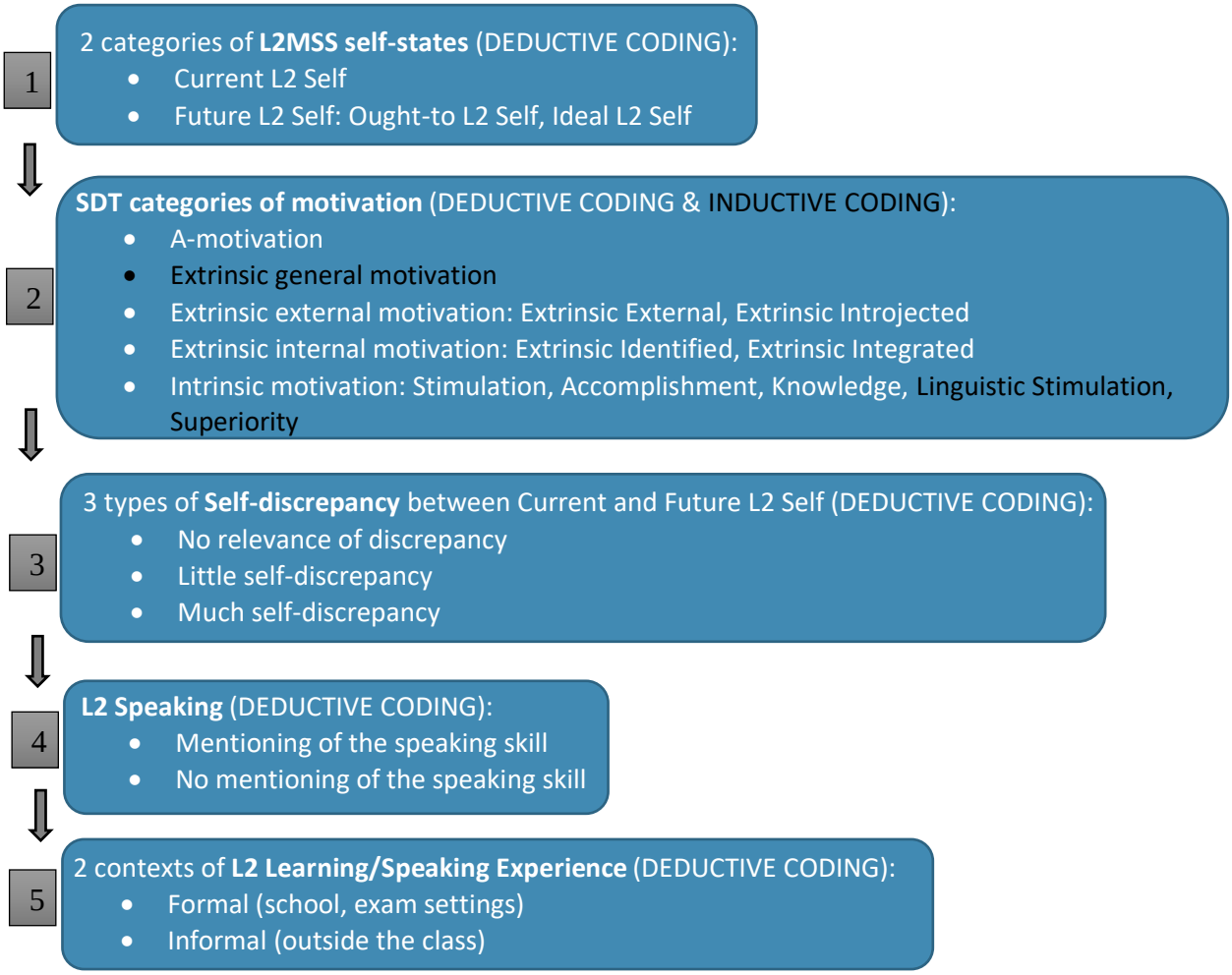


Figure 4.6 Coding process for motivation data.

Firstly, data were coded according to the two self components of L2MSS: Current L2 Self and Future L2 Self. The following cues from the context assisted in the categorisation of data in either self-state: verb tenses (present or future), temporal adverbs and phrases (e.g. "*now*", "*in the future*") and the mentioning of events that occurred at present or constituted a future reality. Cues were always taken into consideration in context and not as isolated words. In the following example, a part of S14's response was coded as Current L2 Self and a part was coded as Future L2 Self. S14 mainly referred to his current self-state ("*I like*

the language", "*English is necessary in our everyday life*"), but also added a reason related to the future ("*two languages are required for a master's*").

> R: "*What are your most important reasons for learning English in the language school"*
> S14: "*I <u>like</u> the language, this is the most important reason for me, and also, two languages <u>are required for a master's</u>. The other language that I'm learning is French and let's be honest, master's or no master's, English <u>is necessary in our everyday life</u>. <u>English is everywhere</u>, even in Greece"* (Time 2). (single-line coding indicates reference to the present, double-line coding indicates reference to the future)

With the help of cues, data about a Future L2 Self were categorised into two types, namely, an Ought-to L2 Self and an Ideal L2 Self (Dörnyei, 2005). For example, responses where the wording showed obligation, such as "*is required*", "*I have to*", "*is necessary*", were coded as Ought-to L2 Self, while data with wording that implied volition, such as "*I'd like to*", "*It's my dream to*" were coded as Ideal L2 Self. Cues did not always clearly indicate one code or another unless the surrounding context was taken into consideration. Students could envision both an Ought-to and an Ideal L2 Self. Following Fryer & Roger (2018), each of the envisioned L2 selves were coded.

The same data were coded a second time and classified under the SDT motivational categories arrived at deductively from previous literature (Section 3.4.2): amotivation, extrinsic external motivation (extrinsic external, extrinsic introjected), extrinsic internal motivation (extrinsic identified, extrinsic integrated) and intrinsic motivation (stimulation, accomplishment, and knowledge). Students' statements were studied alongside the definitions of each SDT category and explanations provided in previous research (Comanaru & Noels, 2009) in order to assign statements to the appropriate categories. Following McEown et al. (2014), the use of certain wording in students' statements assisted in the coding process. For example, when a student described their Current L2 Self and used wording such as "*I really like/love/enjoy*", this was coded as "intrinsic motivation". And if the student mentioned enjoying "*learning about new things*" this was coded as "intrinsic-knowledge". The cues were examined taking into account the broader context of the statement. Appendix D1 provides an overview of the SDT categories with example-statements from student data. Indicative cues that suggest the presence of a certain type of motivation were highlighted in the broader context of the student's

statement. It was considered that there was no overlap between the categories as each represented qualitatively different concepts that have been tested and validated extensively in previous literature. However, students could refer to more than one sub-type of motivation when they gave their answers. Following Comanaru and Noels (2009), each of the stated motivations were coded.

An inductive approach was followed for data that did not fit readily into the pre-determined categories of the SDT framework, despite responses being well-articulated. For possible new categories of motivation, which were identified based on patterns in students' responses, three new categories were created inductively: extrinsic general motivation, intrinsic-linguistic stimulation, and intrinsic-superiority (Appendix D1).

Regarding the new categories of motivation arrived at inductively, one category was created from data that indicated motivation that was extrinsic (i.e. linked to an instrumental goal), with no indication of whether it was more or less internalised. Such responses could not be categorised under the extrinsic external or extrinsic internal categories. Following Comanaru and Noels (2009), for answers that did not specifically match the SDT sub-types of extrinsic motivation, these were coded with regard to the general orientation (i.e. extrinsic) and were classified under the newly created category: extrinsic general motivation.

Besides lack of specific details to indicate whether a student's motivation was externally or internally oriented, responses such as "*I don't know why, I just feel this way*" or "*I had never thought about it before*" were not uncommon. Not all participants specified whether extrinsic motivation originated externally (i.e. was imposed by others, was granted by external sources) or internally (i.e. was generated by the person itself, was internalised). Taking the participants' age into consideration (adolescents) and their status as students, the boundaries between an external regulation (stemming, for example, from teachers or parents) and their own aspirations might still be blurred as they are at the crucial age of forming their sense of self and developing their own interests and goals. Creating the category of "extrinsic general motivation" highlighted this issue.

The two other inductive categories concerned intrinsic motivation. Responses that included enjoying specific characteristics of the language were classified under the new category "intrinsic-linguistic stimulation". When students mentioned enjoying learning English because of feelings of superiority for knowing the language better than L1 others, this was

coded as “intrinsic-superiority”. Examples of both will be seen in the Results chapter (Chapter 5).

Figure 4.7, an updated version of Figure 4.1 (Section 4.2.5), depicts the motivational orientations of the SDT framework that were used to provide different degrees of internalisation to the perceived self-states: Current L2 Self and Future L2 Self, and also includes the aforementioned inductively identified categories of motivation.

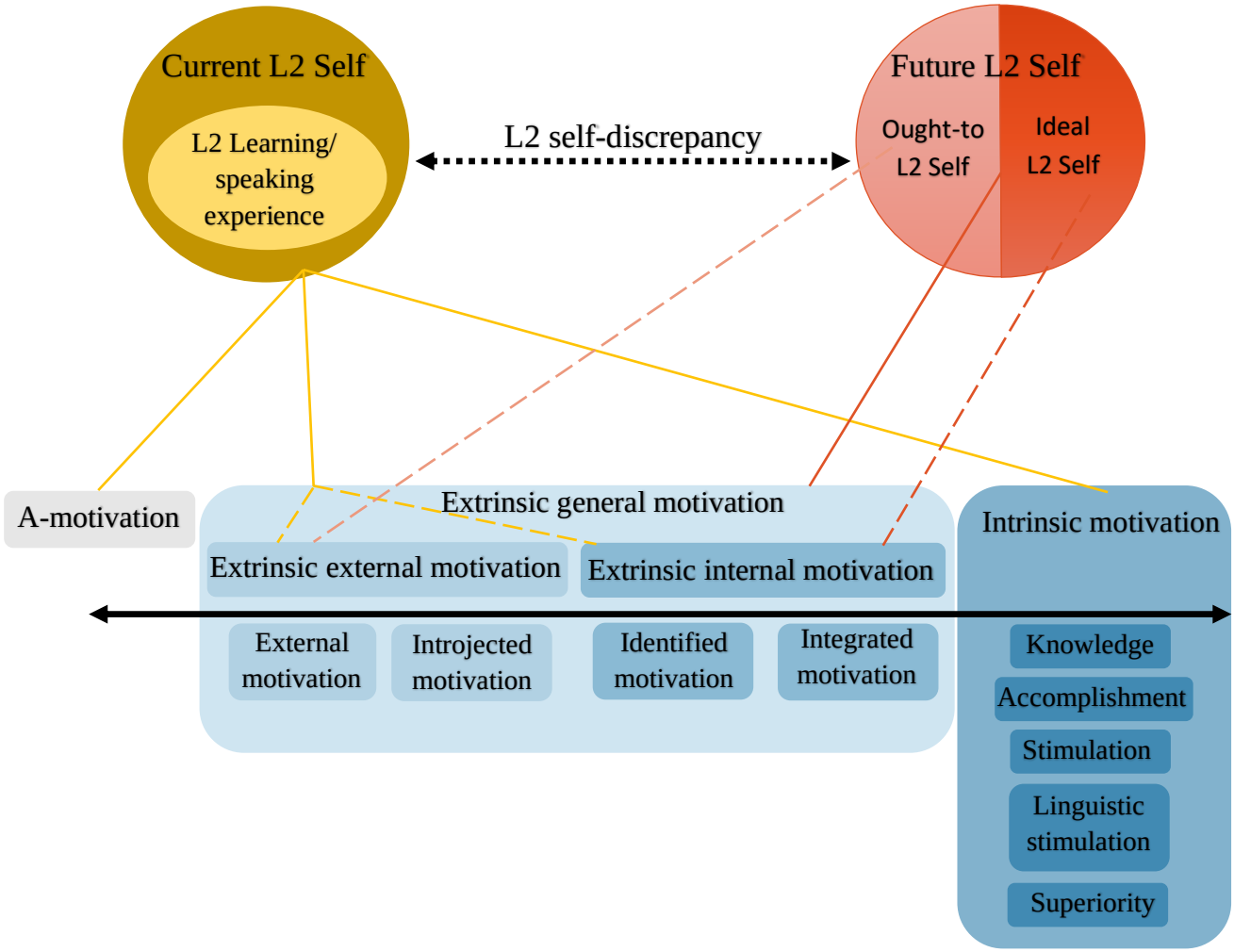


Figure 4.7 Integration of L2MSS and SDT components (updated with inductively identified SDT categories).

Motivation data were coded a third time on the three types of self-discrepancy: little discrepancy, much discrepancy and no relevance of discrepancy. Drawing on Al-Hoorie’s suggestion (2018:26), after data were coded based on Current and Future L2 Self at each time point, statements were read through in order to determine matches, mismatches or neither match nor mismatch between students’ Current and Future L2 Self. It was determined that two statements indicated a match when they were considered similar in

terms of the general meaning of their content. Words or phrases that were repeated in both statements or were synonymous, assisted in identifying a match between the two self-states. A mismatch was identified when the general meaning of the two statements appeared opposite or contradictory. In several cases, there was neither a match nor a mismatch; that is, a student's statements appeared neither similar nor conflicting, but simply different in terms of their meaning. Appendix D2 provides example-utterances from students' interviews coded to different types of self-discrepancy. Drawing on Al-Hoorie (2018), when a student's statements indicated mainly matches, that was coded as "little self-discrepancy", whereas when the statements were interpreted as indicating mainly mismatches, that was coded as "much self-discrepancy". A third code was "no relevance of discrepancy" for statements that were interpreted as indicating neither matches nor mismatches between the two self-states.

Coded data from the aforementioned steps of coding (i.e. L2MSS, SDT and self-discrepancy categories) were quantified for statistical analysis and entered into SPSS as nominal variables. The values 0 and 1 were used to code the non-presence and presence, respectively, of an SDT motivational category that described a Current or Future L2 self. The values 0, 1 and 2 were used to code "no relevance of self-discrepancy", "little self-discrepancy" and "much self-discrepancy", respectively.

4.7 Data analysis

By adopting a concurrent nested design in a longitudinal, mixed methods study, both quantitative and qualitative data analysis were employed to answer the RQs, with emphasis on the former (Creswell, 2003). Quantitative analysis was more predominant in order to reveal with statistical significance trends in learners' DM use (RQ1, RQ2) and to assess the strength of the relationship between the study's dependent variable (learners' DM use) and each of the independent variables, i.e. aspects of formal instruction, spoken proficiency, ISLL, motivation (RQ3); as well as to determine the most important contributor to DM use when all factors were taken together (RQ4). Qualitative analysis was used to provide more insight into the quantitative findings (RQ3 & RQ5) by adding more depth to the numerical results (Dörnyei, 2007). All numerical data were entered into the statistical software IBM SPSS version 25 and STATA version 16.

Data analysis was carried out both at group- and individual-level, following previous research in L2 pragmatics (Taguchi, 2012) and in line with a CDST approach (Lowie, 2017). Data were analysed primarily at group level (RQ1-RQ4) to trace group patterns in terms of DM use (RQ1 & RQ1a), its development over time (RQ2), and its relationship with the factors of spoken proficiency, formal instruction, ISLL, and motivation (RQ3, RQ4). Data were subsequently analysed at individual level through case studies (RQ5) to provide a holistic picture of individual trajectories from beginning to end of the study and to document ways in which individual patterns followed or diverged from the group pattern. Analysis both at group- and individual-level is in line with CDST, which postulates that learning processes are not identical for different learners but are expected to differ across individuals (Lowie, 2017).

4.7.1 Quantitative analysis

For quantitative analysis, it was crucial to employ analytical methods that took into account the study's longitudinal nature, i.e. that data were collected repeatedly from the same participants (Barkaoui, 2014). Longitudinal analysis, contrary to cross-sectional analysis, allows the examination of trajectories over time (RQ2) and the interrelationship of dependent and independent variables (RQ3, RQ4), when time (repeated measures) and individual variation are taken into account (Barkaoui, 2014). This requires advanced statistical techniques, such as mixed-effects modelling, also known as hierarchical or multi-level modelling (Casals et al., 2014). This technique was used to answer RQ2, RQ3 and RQ4 and is introduced in Section 4.7.1.2. Aggregate quantitative analysis (i.e. aggregating data from all time-points) was also used to obtain an overall picture regarding learners' DM use (RQ1) and, in particular, to compare the overall use of the 10 DMs under examination in learners' discourse, teachers' discourse and the content of instructional material (RQ1a).

A necessary step before quantitative data analysis was the exploration of data for all variables, as it would determine the use of either parametric or non-parametric inferential statistical techniques. Data exploration was carried out following the protocol described in Zuur et al. (2010). One extreme outlier was identified through the inspection of boxplots and the value of the 5% Trimmed mean (Pallant, 2013) and subsequently removed from the data (full sample: N=51) prior to quantitative data analyses (however, quantitative analyses repeated with the outlier did not produce different findings to N=51 analyses).

Normality was assessed through inspection of visual representations (histograms) and the Kolmogorov-Smirnov statistic, given the sample size over 50 (Larson-Hall, 2010). Normality tests were conducted and revealed that DM range and the three categories of frequency (textual, interpersonal, textual-interpersonal) were not normally distributed at all time-points: all Kolmogorov-Smirnov statistic values were significant, which indicates violation of the assumption of normality (Pallant, 2013), and histograms reflected non symmetric distribution of data (Appendix E). Although overall DM frequency was normally distributed at Times 1, 2 and 3, for comparative purposes, non-parametric testing was applied throughout. Because the study's dependent variable was non-normally distributed, non-parametric equivalents of statistical procedures were used, following Pallant (2013) and Field (2014).

There were no missing data in the present study, both in terms of the dependent and all independent variables: all participants provided all data at all time-points. Therefore, there was no associated biased parameter estimates and reduced statistical power (Harrison et al., 2018).

4.7.1.1 RQ1 and RQ1a

RQ1 asked: What are the characteristics of DM use in Greek adolescent EFL learners' spoken discourse with regard to the following markers: *so, well, just, like, I don't know, actually/in fact, you know, I mean, sort of/kind of,* and the category of general extenders? In order to answer RQ1, quantitative analysis was conducted based on each time-point separately as well as the average time measure (average across Time 1–Time 4): (a) descriptive statistics were used to examine students' DM range and overall DM frequency at each time-point and on average, (b) Friedman's tests (i.e. the non-parametric equivalent of repeated measures ANOVA) were conducted to assess any differences in the use of textual, interpersonal and textual-interpersonal markers at each time-point and on average and (c) Spearman rho correlations (i.e. the non-parametric equivalent of Pearson correlations) were conducted to examine the relationship between DM range and DM frequency at each time-point and on average. The statistical technique of correlation was in line with Cohen's (1988) conventions regarding the strength of relationship; small: r=.10 to .29, medium: r=.30 to .49, large: r=.50 to 1.0 (Pallant, 2013). Descriptive statistics were also used to examine the frequency of each of the 10 markers under examination (i.e. the

number of tokens of each of the 10 DMs relative to each student's word count and normalised by 1000); for the frequency of the 10 markers, analysis was based on the average time measure in order to provide a general overview of the use of each marker.

Student-participants were categorised into different sub-groups with regard to their DM use; inspection at sub-group level enabled a closer look into different types of DM users and revealed differences between participants that would remain hidden if all students were treated as one uniform group. The criterion used for the categorisation of participants into the different sub-groups of DM users was DM range. Kruskal-Wallis tests were conducted to corroborate categorisation based on DM range, which led to four DM user sub-groups for each time-point:

- students who made no use of DMs, i.e. **non-DM users** (0 out of 10 DM types),
- students with narrow DM range, i.e. **limited DM users** (1-2 out of 10 DM types),
- students with moderate DM range, i.e. **moderate DM users** (3-4 out of 10 DM types), and
- students with wide DM range, i.e. **considerable DM users** (5-10 out of 10 DM types).

Dividing the sample into these sub-groups at each time-point was based on the following grounds. Firstly, the division was guided by the distribution of the data, which revealed somewhat clearly defined categories of users: those at the top end of the distribution with regard to their DM range ("considerable DM users"), those at the low end ("non-DM users") and those whose DM range was in-between the two contrasting ends ("limited DM users" and "moderate DM users"). At every time-point, those students at the top end of the distribution (12%-17% of participants[23]) stood out because compared to the rest of the participants, they employed half or more than half of the DM types under examination (5 or more out of 10). Owing to their comparatively broad DM range, those students constituted a category of their own and were identified as "considerable DM users". Students at the low end of the distribution (10%-17% of participants) did not employ any of the 10 DM types, thus fell naturally into a category of their own and were identified as "non-DM users".

[23] The range indicates the range of the percentage of participants who belonged to the DM user sub-group at any of the four time-points.

Those participants in between the two cut-off points set by the considerable DM user sub-group and the non-DM user sub-group employed at least one but fewer than half of the 10 DMs under scrutiny (<5). More specifically, participants who employed between 1 and 2 DM types were identified as "limited DM users" (35%-48% of participants), while those who employed between 3 and 4 DM types were identified as "moderate DM users" (27%-30% of participants). Creating the two sub-groups of limited and moderate DM users was deemed necessary as it was considered inappropriate to identify as equal type of user those who had employed 1 or 2 types of DMs and those with 3 or 4. A second factor that guided the categorisation of students into the different DM user sub-groups was previous research: division based on low, mid and high pragmatic gain has also been conducted in previous studies (Taguchi, 2012). Finally, the created sub-groups were a manageable number that allowed exploratory and fine-grained, qualitative examination of different types of DM users to address subsequent RQs (RQ3, RQ5).

Differences between the four DM user sub-groups in terms of DM range, overall DM frequency and the frequency of the 10 DMs under examination were assessed through Kruskal-Wallis tests (i.e. the non-parametric equivalent of one-way between-groups ANOVA). Mann-Whitney U tests were conducted as post-hoc tests (with Bonferroni correction) to follow up significant results. Effect sizes for Kruskal-Wallis tests were computed using the eta-squared estimate (Tomczak & Tomczak, 2014).

RQ1a asked: How is the learners' DM use similar to or different from DM use in their teachers' discourse and the DM content of instructional material with regard to the markers under examination? In line with the theoretical framework of the study (CDST), which emphasises the importance of studying a phenomenon (learner DM use) in its context (Hiver & Al-Hoorie, 2016), learners' DM use was studied in the broader Greek EFL context by examining the DM use of the participants' teachers and the DM content in their instructional material. To answer RQ1a, firstly descriptive statistics were used to examine DM range, overall DM frequency and the three categories of frequency in teachers' discourse and the content of instructional material. As explained in Section 4.6.1.10, all aspects of teachers' DM use were analysed using relative values, whereas DM content in textbooks was analysed using absolute (raw) values. Differences between students' DM use, teachers' DM use and DM content in textbooks were assessed through descriptive analysis and were based on the average time measure in order to provide a general overview. Three issues should be voiced. Firstly, the difference in mode must be acknowledged between instructional material (written) and teacher and learner discourse

(spoken). However, because the parts of the instructional material chosen for analysis intended to represent spoken rather than written discourse, comparisons were considered valid. Another issue is the different purpose for speaking, namely students participated in speaking activities whereas teachers delivered a lesson. However, since both teacher and learner spoken data were collected inside formal instruction settings (language school), they were both intended to portray language spoken in the EFL context, therefore justifying the in-between comparison. Finally, the comparisons were descriptive; a comparison that would reveal statistically significant differences between the three data sources was not feasible due to the small number of teachers and the different metric of DM frequency in instructional material (i.e. absolute instead of relative frequency).

4.7.1.2 Mixed-effects modelling for group-level analysis: RQ2, RQ3 and RQ4

> RQ2: How does Greek adolescent EFL learners' DM use change over time?
>
> RQ3: How do the factors of spoken proficiency, formal instruction, ISLL and motivation each impact learners' DM use over time?
>
> RQ4: Which of the factors of spoken proficiency, formal instruction, ISLL and motivation, taken together and controlling for age and gender, contribute(s) to broad and frequent learner DM use over time?

In order to answer RQ2, RQ3 and RQ4, the present study responded to calls in the literature urging longitudinal studies in SLA to shift from using traditional statistical analysis (e.g. ANOVA, multiple regression) towards employing more advanced techniques that are appropriate for longitudinal designs and which correspond to the theoretical model of the study, i.e. CDST (Hiver & Al-Hoorie, 2020). Mixed-effects modelling is an advanced data analysis technique which belongs to the family of growth curve modelling and is an extension of regression models (McNeish & Matta, 2018). Mixed-effects modelling models longitudinal data and is used to explore trajectories over time, whether significant changes occur in development and how trajectories are shaped by different factors (Shek & Ma, 2011). More specifically, mixed-effects modelling is used to estimate between-person differences (i.e. inter-individual variability) in within-person trajectories (i.e. intra-individual trajectories) (Curran et al., 2010).

There are three main reasons why mixed-effects modelling was preferred to more traditional statistical techniques for quantitative analysis used to answer RQ2, RQ3 and RQ4. Firstly, for a study such as the present one, which follows a CDST approach, mixed-effects modelling controls for and also quantifies individual variation when studying a group trajectory over time (Cunnings, 2012). In other words, mixed-effects modelling allows not only the analysis of the average group trajectory but also whether and the extent to which individual trajectories vary around the group pattern (Curran et al., 2010), as well as whether and the extent to which different individual and contextual factors influence inter-individual variation in trajectories (Barkaoui, 2014). Maintaining the observed variability in the data is important because it provides a more accurate picture of the data and answers the RQs in a more inclusive way than if employing traditional techniques (Linck, 2016).

Secondly, mixed-effects modelling incorporates time (i.e. repeated measures) into the analysis, not through separate comparisons of pairs of time-points (e.g. Time 1 vs. Time 4), as is the case with cross-sectional studies. On the contrary, this method is used to explore change in the dependent variable (RQ2) or its interrelationship with independent variables (RQ3, RQ4) across time. Connected to that is the fact that mixed-effects modelling is not restricted to modelling linear change over time, as is the case with more traditional methods, but allows for modelling of growth that is non-linear or flat with respect to time (Curran et al, 2010). This is in line with a CDST approach which (a) focuses on the process rather than the product of learning (Atkinson, 2011), (b) postulates that learning follows nonlinear patterns (Murakami, 2016) and (c) recognises stable states in development, when trajectories settle into attractor states (Opitz, 2017).

Thirdly, mixed-effects modelling accounts for dependency in different levels of the data (Tabachnick & Fidell, 2014). In a longitudinal study such as the current one, the same variables were measured on the same participants on multiple occasions; therefore, it is likely that data provided by the same individual at Time 1 were related to data provided by the individual at Time 2 (and subsequent time-points), due to the fact that data were collected each time from the same individual, i.e. there is within-subject correlation (Cunnings & Finlayson, 2015). Moreover, in studies such as the present one where participants were recruited from different classes in different schools, data collected from participants within the same class or school are likely to be more similar to each other than to data collected from participants of different classes or schools, because they belonged to the same environment, i.e. there is within-class or within-school correlation (Cunnings &

Finlayson, 2015). Therefore, there might exist dependency in the data at different levels: the participant level, the class level and the school level. As Figure 4.8 shows, the different levels are represented in a hierarchical structure, whereby different time-points of measurement are nested within individuals, who are in turn nested within classes, which are nested within schools.

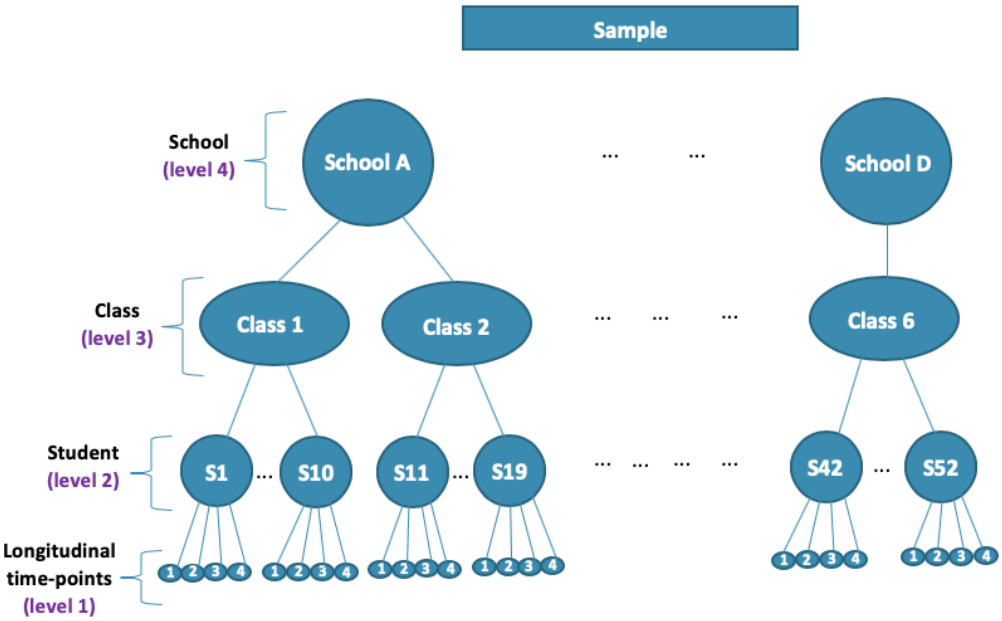


Figure 4.8 Dependency structure for the student dataset.

It has been argued that traditional techniques do not accommodate all possible levels of dependency at once, which can result in statistical errors, loss of information and decreased statistical power (Tabachnick & Fidell, 2014). Mixed-effects modelling can account for variation in the dependent variable (i.e. DM use) that arises from different levels (i.e. individuals, classes or schools) (Tabachnick & Fidell, 2014). It must be noted, however, that even in hierarchical structures, there might be no dependency in the data at all levels (Peugh, 2010). For example, there might be no dependency at school level (level 4), meaning that students of one school are not more highly correlated with each other than with students of another school. Nevertheless, appropriate techniques must be used to diagnose any dependency or lack thereof (Peugh, 2010). In this study, dependency in the data was diagnosed through the calculation of the ICC following Peugh (2010) and will be explained in Section 4.7.1.3.

Mixed-effects modelling incorporates fixed and random effects. Through the inclusion of fixed effects, it captures characteristics of growth and associations between independent variables and the dependent variable for the group as a whole (Curran et al., 2010). Fixed effects are parameters that model the mean trajectory for the group as a whole, and the effect of the independent variables on the dependent variable (Cunnings, 2012). Fixed effects can be time-varying or time-invariant. For example, spoken proficiency, ISLL and motivation were time-varying variables given that they were measured at each time-point, whereas aspects of formal instruction (e.g. class-level attended) were time-invariant variables.

Through the inclusion of random effects, mixed-effects modelling also acknowledges variability across and within individuals/classes/schools, accommodating possible dependency in the data (Cunnings & Finlayson, 2015). Random effects are parameters that model variation, i.e. the variance of individual trajectories around the group average as a result of random sampling from the population (McNeish & Matta, 2018). Individual variation is accounted for by (a) incorporating random intercepts, i.e. accounting for variability across individuals at the starting point or a particular time-point in the study, and (b) incorporating random slopes, i.e. accounting for variability across individuals at the rate of change over time. The smaller the random effects, the less the variance across individuals; that is, the more similar the individual trajectories at the intercept (starting point) and/or slope (rate of change) (Curran et al., 2010).

In this study, mixed-effects modelling enabled the examination of students' trajectories of DM use over time in order to address RQ2, accounting for possible individual variation at intercept and/or slope with the inclusion of random effects. Moreover, mixed-effects modelling was used to examine the change over time in time-varying independent variables (e.g. spoken proficiency) and, subsequently, to examine the impact of different independent variables on DM use by taking time (repeated measures) and individual variation into consideration, in order to answer RQ3 and RQ4. Most independent variables were at student-level (i.e. level 2 of the dependency structure), such as spoken proficiency, ISLL and motivation. The study also looked into contextual variables at class- and school-level (i.e. levels 3 and 4 of the dependency structure), such as different aspects of formal instruction (e.g. level of class attended, hours of formal instruction attended per week). Further details as to how mixed effects models were constructed to address RQ2, RQ3 and RQ4 are presented in subsequent sections. For model validation and the reporting of results, the present study follows the recommendations of Zuur and Ieno (2016).

4.7.1.3 RQ2

RQ2 asked: How does Greek adolescent EFL learners' DM use change over time? In order to examine change in DM use over time, mixed effects models were constructed. Because aspects of DM use were not normally distributed, the Generalized Linear Mixed Model (GLMM) was used (instead of a linear mixed model), which is a specific type of mixed-effects modelling for non-normally distributed dependent variables (Garson, 2013). Since the dependent variable (i.e. DM use) was represented by five metrics (i.e. DM range, overall DM frequency, textual DM frequency, interpersonal DM frequency and textual-interpersonal DM frequency), five separate GLMMs were constructed with each of the five aspects of DM use as the dependent variable in each model. DM range was treated as a count variable; therefore, a Poisson distribution with a log link function was used. Overall DM frequency and its categories (textual, interpersonal, textual-interpersonal) were each treated as non-normally distributed, continuous variables[24]; therefore, a gamma distribution with a log link function was used[25].

Time (linear) was set as a fixed effect to examine whether there was linear rate of growth in DM use over time (i.e. increase, decrease). If the effect of linear time is significant, higher-order polynomial models can be tested, examining whether there is quadratic or cubic rate of change (i.e. whether rate of change accelerates or decelerates)[26]. To test the quadratic rate of change, a quadratic parameter (time x time) is added as a fixed effect. To test the cubic rate of change, a cubic parameter (time x time x time) is added as a fixed effect. This is in line with previous developmental studies that suggest that individual trajectories are usually nonlinear over time (Nagle, 2018). However, if the effect of linear time is not significant, there is no need for further analysis using higher-order polynomial models (Shek & Ma, 2011).

[24] For the purpose of modelling, the continuous variables were transformed; a positive constant was added to every value in order to eliminate zero values, as suggested by Stevens (2007).
[25] The same distributions were used for every model in the study that had DM range, overall DM frequency or each of the three categories of frequency as the dependent variables, respectively.
[26] Following Field (2014), the number of polynomials to fit should be one less than the number of the study's time-points. In this study, where there were four time-points, three polynomials could be fitted: first-order (linear trend), second-order (quadratic trend) and third-order (cubic trend) polynomials.

Finally, in order to identify (a) which random effects to add to the models and, consequently, (b) in which of the four levels of the study's dependency structure lay variability, the ICC was calculated for each level of the dependency structure (Peugh, 2010). The cut-off point of ICC=.25 was used, following previous literature (Heinrich & Lynn Jr., 2001). Values above the cut-off point and lower than 1.0 indicate that variation in the dependent variable is attributable to variation in the respective level (e.g. school) and therefore the respective level needs to be added as a random effect in the model in order to account for such variation (Monsalves et al., 2020).

For all five aspects of DM use, the contribution to the ICC for school (level 4) was very small (ICC=.000 for DM range, ICC=.006 for overall DM frequency, ICC=.002 for textual frequency, ICC=.000 for interpersonal frequency and ICC=.007 for textual-interpersonal frequency), which implied that almost no variation in any aspect of DM use was attributable to variation among schools. Similarly, the contribution to the ICC for class (level 3) was small (ICC=.045 for DM range, ICC=.059 for overall DM frequency, ICC=.077 for textual DM frequency, ICC=.013 for interpersonal DM frequency and ICC=.000 for textual-interpersonal DM frequency), which implied that little variation in aspects of DM use was attributable to variation among classes.

Although little or almost no variation in DM use was attributable to variation among higher level units (school and class), considerable variation in DM use was attributable to variation in the student level. The contribution to the ICC for student (level 2) was high (ICC=.045 for DM range, ICC=.655 for overall DM frequency, ICC=.551 for textual frequency, ICC=.394 for interpersonal frequency and ICC=.200 for textual-interpersonal frequency), which implied that considerable variation in aspects of DM use was attributable to variation among students. In other words, 65% of total variation in DM range, 66% of total variation in DM frequency, 55% of total variation in textual frequency, 39% of total variation in interpersonal frequency, and 20% of total variation in textual-interpersonal frequency were due to interindividual differences. Therefore, in the present study, a random intercept for student was added to every GLMM to account for individual variation. The random effect of time was also added to account for student-specific slopes over time.

For every GLMM that was fitted to address RQ2 (also RQ3 and RQ4), random effects were included using parsimonious random effects structure, following Bates et al. (2015), i.e. simpler models were preferred to more complex models. Random effects were added

one at a time; that is, firstly a random intercept and then a random slope (i.e. random effect for each time-varying fixed effect). The fit of each model was compared before and after the addition of every random effect; the Akaike Information Criterion Corrected (AICC) was used to assist in the selection of the appropriate model (Field, 2014). A lower AICC value indicated better quality of fit (Field, 2014). If adding a new random effect significantly improved the model fit (as indicated by a chi-square likelihood ratio test), it remained, but if it did not, it was removed. To compute the degrees of freedom, a Satterthwaite adjustment was used due to small sample size. The models with the minimum AICC were selected. Following Vercellotti (2017), the results report statistics for the final models rather than statistics for competing models.

It should be noted that because GLMMs have only recently started gaining ground in research in different academic fields (including SLA), formulas to calculate important measures such as R^2 (i.e. the variance explained by the model, or "global effect size", Peugh, 2010:97) have not been developed for all types of GLMMs or have not been incorporated in all statistical packages available. More importantly, there is lack of consensus regarding a widely accepted formula to calculate R^2 in GLMMs when the study has a repeated measures design (i.e. is longitudinal), such as the current one (Piepho, 2019). For that reason, the present study did not calculate the R^2 for each model, but it was believed that lack of such information did not affect the results. This issue is discussed further in the limitations of the study (Chapter 7).

In all models in the present study, including a random slope to account for individual variability in rate of change resulted in larger AICC values. Moreover, in most models, when random slopes were fit, variance approached zero, suggesting that this parameter could be removed (Nagle, 2018). This indicated that random intercept models (rather than random intercept and random slope models) captured all the variation, i.e. there was significant variability among participants in the different aspects under examination in the present study. Lack of random slopes suggested that there was no statistically significant variability in students' trajectories over time, i.e. variation in change over time was not systematic among the participants, meaning that the sample as a whole followed a similar trajectory in terms of the different aspects under examination (Curran et al., 2010). Therefore, random-intercept GLMMs (instead of random-intercept and random-slope GLMMs) were constructed to address all RQs, following Cheng et al. (2009).

4.7.1.4 RQ3

RQ3 asked: How do the factors of spoken proficiency, formal instruction, ISLL and motivation each impact learners' DM use over time? In order to answer RQ3, separate analysis was conducted for each of the four factors. Table 4.9 summarises the metrics of each factor that were used in statistical analysis.

Table 4.9 Variables for quantitative analysis for RQ3.

Independent Variable	Measure	Metrics	Type of variable	Categories (nominal/ ordinal variables)
Spoken proficiency	Speaking scores	Global scores	continuous	
		Fluency and coherence scores	continuous	
		Lexical resource scores	continuous	
		Grammatical range and accuracy scores	continuous	
		Pronunciation scores	continuous	
Formal instruction	Aspects of formal instruction attended	School	nominal	A/ B/ C/ D
		Class-level	nominal	lower/ higher
		Number of hours of formal instruction per week	continuous	
		Previous years of formal instruction	continuous	
ISLL	Engagement in out-of-class activities	Overall engagement in all activities	continuous	
		Engagement in each activity separately	ordinal	never/ on occasion/ frequently
Motivation	Stated motivations regarding a Current L2 Self	Amotivation	nominal	presence/ non-presence of motivation type
		Extrinsic general	nominal	
		Extrinsic external	nominal	
		Extrinsic introjected	nominal	
		Extrinsic identified	nominal	
		Extrinsic integrated	nominal	
		Intrinsic-stimulation	nominal	
		Intrinsic-linguistic stimulation	nominal	
		Intrinsic-accomplishment	nominal	
		Intrinsic-knowledge	nominal	
		Intrinsic-superiority	nominal	
	Stated motivations regarding a Future L2 Self	Extrinsic general	nominal	
		Extrinsic external (Ought-to L2 Self)	nominal	
		Extrinsic introjected (Ought-to L2 Self)	nominal	
		Extrinsic identified (Ideal L2 Self)	nominal	
		Extrinsic integrated (Ideal L2 Self)	nominal	
	Self-discrepancy		nominal	little/ much/ no relevance

Quantitative analysis followed a similar three-step procedure for each time-varying factor (i.e. spoken proficiency, ISLL and motivation), whilst only the third step was applied to the time-invariant factor (i.e. formal instruction). Firstly, with regard to the time-varying factors (i.e. spoken proficiency, ISLL and motivation), descriptive statistics were used for each time-point to explore students' (a) speaking scores, (b) frequency of engagement in different informal L2 activities, and (c) types of stated motivation.

Secondly, random-intercept GLMMs were constructed with each of the time-varying factors as the dependent variable and time as a fixed effect to examine change in each factor over time. Higher-order polynomial models for continuous variables (e.g. spoken proficiency) were only added where the effect of time (linear) was significant. In terms of spoken proficiency, each aspect (i.e. global score, fluency and coherence, lexical resource, grammatical range and accuracy, pronunciation) was treated as a non-normally distributed, continuous variable (as indicated by significant Kolmogorov-Smirnov tests); therefore, a gamma distribution with a log link function was used. With regard to ISLL, two types of variables were examined: overall engagement in all out-of-class activities and engagement in each out-of-class activity separately. Overall engagement was treated as a non-normally distributed, continuous variable (as indicated by significant Kolmogorov-Smirnov tests); therefore, a gamma distribution with a log link function was used. Engagement in each activity separately was treated as an ordinal variable when it consisted of three levels of engagement (i.e. frequently, on occasion, never); therefore, a multinomial distribution with cumulative logit link function was used. Engagement in each activity separately was treated as a nominal variable when it consisted of two levels of engagement (i.e. frequently, never); therefore, a binomial distribution with logit link function was used. In terms of motivation, stated motivations were treated as nominal variables (i.e. presence or non-presence of a motivation type); therefore, a binomial distribution with logit link function was used.

For the third step of analysis, GLMMs were fitted with each aspect of DM use as the dependent variable and each of the factors as fixed effects in order to examine how each factor separately impacted each aspect of DM use. More specifically, models that examined the impact of the factor of spoken proficiency on DM use included the different types of scores as fixed effects. Models that examined the impact of the factor of formal instruction on DM use included the different aspects of formal instruction (e.g. class-level, number of hours of formal instruction attended per week) as fixed effects. Models that

examined the impact of the factor of ISLL on DM use included engagement in the different informal L2 activities as fixed effects. Finally, models that examined the impact of the factor of motivation on DM use included the different types of stated motivation as fixed effects.

An important aspect to consider when fitting GLMMs with more than one fixed effect (i.e. "predictors") is the predictor selection strategy; that is, which fixed effects to include into each model. The present study fitted maximal models; that is, all fixed effects of interest were included in each model (after performing collinearity diagnostics, see below). Other strategies such as stepwise selection or backward elimination, whereby non-significant factors are removed in order to arrive at minimal adequate models (i.e. parsimonious models with only significant fixed effects), have been heavily criticised in previous literature because they can result in highly inflated Type I errors (Burnham, Anderson & Huyvaert, 2011). Moreover, simplicity or parsimony in terms of predictors are not always representative of complex systems (Harrison et al., 2018). Therefore, such strategies were not preferred in the present study and maximal models ("global models") were fitted instead.

The decision regarding the total number of fixed and random effects to include in each model was informed by the n/k ratio, whereby n is the number of measured observations in the study and k is the number of estimated parameters (i.e. fixed and random effects) (Harrison et al., 2018). Ratios adopted in the literature have been less conservative (n/k=3) or more conservative (n/k=10; Harrison et al., 2018). Because of no missing data and four data collection time-points, the total n was 204 (n=51 x 4 time-points = 204), which could allow a total number of parameters ranging from 20 (more conservative) to 68 (less conservative). The present study aimed to be close to the more conservative end to mitigate unreliable model estimates (Harrison et al., 2018).

Interactions between fixed effects were dropped if their inclusion resulted in higher AICC values than the AICC value of the already fitted model, following previous literature (Cunnings, 2012). Where nominal variables were included in the GLMMs as fixed effects (i.e. aspects of formal instruction, informal L2 activities, motivation types), these were dummy coded. Reference categories are indicated in the presentation of the results.

An assumption that had to be met before fitting GLMMs with more than one fixed effect was absence of collinearity (Harrison et al., 2018). To help reduce collinearity, variables

were grand mean centred following Peugh (2010) and Cunnings (2012). For GLMMs that included continuous variables as fixed effects (e.g. spoken proficiency), collinearity was assessed through the inspection of correlation coefficients between the predictors and VIF values and tolerance values (Pallant, 2013). For GLMMs that included nominal and ordinal variables as fixed effects (e.g. ISLL activities), collinearity was assessed through the inspection of Phi and Cramer's V values. Correlations with r's ≥ .900, Tolerance values of < .10 and VIF values of > 5 for continuous variables, and Phi and Cramer's V values of ≥ .500 for nominal and ordinal variables indicate strong relationship between the variables, and therefore presence of collinearity, impeding reliability of regression analyses (Larson-Hall, 2010). Although in analyses such as multiple regression and ANOVA it is necessary to meet further assumptions (e.g. homoscedasticity and sphericity), GLMMs do not make such assumptions (Linck & Cunnings, 2015), and therefore these were not assessed in the present study.

The results of GLMMs for the factors of ISLL and motivation were further corroborated through descriptive analysis based on the fourfold categorisation of student-participants into types of DM users at each time-point (i.e. considerable, moderate, limited, non-DM users). Inspection at sub-group level aimed to facilitate the interpretation of the results of mixed-effects modelling.

4.7.1.5 RQ4

RQ4 asked: Which of the factors of spoken proficiency, formal instruction, ISLL and motivation, taken together and controlling for age and gender, contribute(s) to broad and frequent learner DM use over time? In order to answer RQ4, random-intercept GLMMs were constructed with each aspect of DM use as the dependent variable and all factors under examination (i.e. spoken proficiency, formal instruction, ISLL, motivation, age and gender) added as fixed effects. Where the variable to be added as a fixed effect had a large number of sub-variables (i.e. different ISLL activities, different types of motivation), adding all sub-variables (i.e. all ISLL activities, all motivation types) was, firstly, not ideal since the generated models were too complex for the study's sample size (based on the n/k rule explained before), and secondly, it resulted in higher AICC values than if including only those sub-variables (e.g. activities, motivation types) that emerged as key effects in previous analysis (i.e. RQ3). Collinearity diagnostics were performed before fitting the models.

4.7.2 Qualitative analysis

Qualitative analysis was used to supplement the quantitative results for RQ3 and to address RQ5, providing further insight into the relationship between DM use and the factors under examination. As already seen in Section 4.6.3, the present study employed thematic qualitative text analysis to analyse qualitative data for RQ3 (Kuckartz, 2014). Categories were developed both deductively (based on the literature and RQs) and inductively (as new categories emerged reading the transcripts). To answer RQ5, qualitative analysis was employed at individual-level through case studies, as will be explained in 4.7.2.3. Two elements that were taken into consideration during analysis, interpretation and presentation of qualitative findings were (a) the type of DM user each student was at each time-point (i.e. considerable, moderate, limited, non-DM user), and (b) the study's four time-points, given that they occurred at key points during the school year (Section 4.5). In other words, qualitative data were studied alongside information about the participants' DM use and the time-point data were collected in order to draw links and understand the effect of each factor on DM use longitudinally.

4.7.2.1. Spoken proficiency

Regarding spoken proficiency, comments supplied by the two assessors about each student's oral performance at each time-point were examined to gain more insight into their scoring, such as whether assessment differed depending on DM user type. Initially, a frequency count was conducted for each assessor's comments through AntConc software; content words with the highest frequencies in the comments were taken to indicate the assessors' focus during scoring. The ten[27] most frequently occurring content words at each time-point were then studied in concordance lines and subsequently traced in the comments and studied in the broader context of the comment. Patterns in the wording (e.g. frequent collocations) were identified and interpreted, taking into account the respective time-point, the type of DM user the comment was intended for and the scores the participant had been assigned.

[27] This number was decided upon owing to the size of the data.

4.7.2.2 ISLL

With regard to ISLL, qualitative analysis was used to supplement the quantitative results by an examination of the reported behaviours of different types of DM users when they engaged with language input in their ISLL. Data were analysed from student interviews, in the parts in which participants had been asked to provide, or provided on their own, more detailed descriptions of the activities in which they engaged and, in particular, of the ways in which they engaged with the language they encountered during their ISLL (e.g. noticing linguistic items). Data were coded inductively based on patterns in responses of students in different DM user sub-groups.

Qualitative analysis was also performed on data regarding the attributions of different types of DM users for their DM learning/use. Data were coded deductively based on four predetermined categories: formal instruction, ISLL, both, other (i.e. for attributions that did not fall under the first three categories). These categories were decided upon to further understand the relationship between ISLL and DM use from the participants' viewpoints.

4.7.2.3 Motivation

As already seen in Section 4.6.3.2, coding of qualitative data on motivation was primarily conducted at the data processing stage in order to identify the different types of motivation expressed by students at each time-point regarding their Current L2 Self, Future L2 Self and present-future self-discrepancy, so as to extract numerical codes for statistical analysis. Initial coding described in Section 4.6.3.2 had followed a three-step procedure. Additional two-step coding was performed on the same data to be used only for qualitative analysis.

Following the previous coding process (Section 4.6.3.2, Figure 4.6), the same data on motivation were coded deductively into two categories: "mention of the speaking skill" and "no mention of the speaking skill". Qualitative analysis was conducted to gain insight into the type of DM users who specifically referred to L2 speaking when expressing different types of motivation. Drawing on previous literature (Yamato et al., 2013; Ushioda, 2016), it was hypothesised that students who referred to speaking in English

when mentioning their Ideal L2 Self would be broader DM users than students for whom speaking was linked to an Ought-to L2 Self.

At the final step, data were coded deductively to two categories pertaining to the context of L2 learning/speaking experience: the "formal context" (school, exam settings) and the "informal context" (outside the class). Qualitative analysis was conducted to examine the two contexts of engagement (formal and informal) and hence shed light into the motivational component L2 Learning/Speaking Experience. In the literature, the two contexts of engagement with English (formal or informal) were found to have different effects on learners' motivation (Henry & Cliffordson, 2017; Lamb & Arisandy, 2020). In the present study, different perceptions and motivations linked to learning/speaking in either context might be associated with differences in spoken DM use. Inductive coding was also used to identify patterns in the responses of different types of DM users regarding their perceptions of the quality of L2 speaking in the two contexts, given the study's focus on L2 speaking (spoken DM use).

4.7.2.4 RQ5

RQ5 asked: How do the factors of spoken proficiency, formal instruction, ISLL and motivation interact with learners' DM use over time at the individual level? Following analysis at group-level (RQ2, RQ3, RQ4), which examined variables in isolation and in combination in order to assess their impact on DM use over time for the sample as a whole, analysis at individual-level (RQ5) shifted the focus from variable to participant. In line with CDST approaches in SLA, case studies of individuals within the group were selected as the method of individual-level analysis because they provided a holistic account of individual DM user systems from beginning to end of the study and the ways in which the factors under examination and their inter-relationship potentially shaped individual trajectories of DM use longitudinally. In line with CDST, individual case-studies can "provide complementary information about the process of development" (Lowie & Vespoor, 2018:203). In this study, four individuals were selected for case study analysis.

Given that RQ5 enquired about individual cases, i.e. individual learner systems, it was deemed suitable to analyse data based on Hiver and Al-Hoorie's (2016:744) "dynamic ensemble", as it demonstrates how CDST theory can be empirically implemented by

outlining all considerations for the study of individual trajectories. Table 4.10 summarises these considerations and how they were incorporated to assist in data analysis for RQ5.

Table 4.10 The "dynamic ensemble" of the study (adopted from Hiver & Al-Hoorie, 2016:744).

Complexity considerations		**Present study**
Operational considerations	*System*	The system under examination was the development of L2 spoken DM use. The student-participant is the agent of the system.
	Level of granularity	The two principal components of DM use in the present study (i.e. DM range and overall DM frequency) were the items for analysis and were examined over 4 time-points (timescale).
Contextual considerations	*Context*	The context in which the system is embedded was the Greek EFL context with a focus on exam preparation for the attainment of a language certificate.
Macro-system considerations	*Dynamic processes*	These are changes in the system that result in the system's self-organisation. Change can be gradual or abrupt (e.g. jumps). For example, abrupt change was if a student's DM use considerably increased or decreased from one time-point to the next.
	Emergent outcomes	The state in which the system has stabilised, i.e. attractor state. Perturbations are disturbing forces such as external events (e.g. a trip abroad) that depending on the degree of the force (e.g. small, large) might cause the system to leave its attractor state (i.e. period of stability) (Larsen-Freeman, 2019). Phase transition occurs if the system leaves its attractor state and ends up in a newer state (Howe & Lewis, 2005).
Micro-structure considerations	*Components*	The variables that make up the system under examination were the two principal aspects of DM use, i.e. DM range and overall DM frequency.
	Control parameters	The potential factors which interact to guide the individual trajectory were considered to be the study's independent variables (following Gilmore, 2016), that is, spoken proficiency, aspects of formal instruction, ISLL and motivation, acknowledging that each can be viewed as a complex system in and of itself. The list of control parameters can be exhaustive (Hiver, 2015), but the present study focused on the aforementioned four, as they were considered possibly relevant factors that could guide trajectories of DM use. The study of control parameters enables the researcher to interpret dynamic processes (patterns) and emergent outcomes in the system (Hiver, 2015).

The present study's four data iterations rendered the use of quantitative methods inappropriate for individual-level analysis. To perform quantitative analysis at individual-level, high density of observations is needed, which, according to van Geert and van Dijk (2002)'s rule of thumb, is equal to or more than five data iterations. For this reason, a

qualitative approach was considered more suitable, following previous research with similar number of iterations (e.g. Taguchi, 2012).

Some caveats must be noted for using qualitative rather than quantitative methods at individual-level to study the phenomenon under scrutiny. Firstly, it cannot be tested whether the observed patterns (i.e. increase, decrease, fluctuations) for each individual are a developmental phenomenon; that is, that change is meaningful rather than random. Secondly, it cannot be assessed whether individuals who display different patterns of DM use over time significantly differ from one another. To overcome these limitations, individual-level analysis was guided by the statistical results of previous quantitative analysis at group-level (RQ2), which indicated a pattern for the sample as a whole. In particular, individual-level analysis was informed by those results by selecting to further investigate and compare typical and non-typical cases; that is, individuals whose DM use followed and deviated from the group pattern, respectively. It was subsequently examined how the factors of interest (i.e. spoken proficiency, formal instruction, ISLL and motivation) might have shaped the different trajectories, addressing RQ5.

Typical and non-typical cases were selected through maximum variation sampling (Dörnyei, 2007), whereby cases were chosen based on the four different outcome levels, i.e. DM user profiles: considerable, moderate, limited, non-DM users. Students were typical cases if they followed the group pattern of DM use over time and non-typical if they deviated from it. This enabled the study of both variation and similarities across the diverse sample (Taguchi, 2012). By selecting to analyse different types of DM users who followed distinct trajectories over time, a range of DM user experiences were examined, complementing group-level analysis and providing more in-depth information. The multiple case study approach mitigated concerns for generalizability. Extreme case sampling was also used in order to study the extreme outlier in the data, as it could provide valuable information about the limits of the phenomenon under examination (i.e. learners' DM use) (Dörnyei, 2007).

After selecting cases to study, a profile was built for each individual for each time-point, gathering information on all considerations outlined by Hiver and Al-Hoorie's "dynamic ensemble", starting with each learner's system components (DM range, overall DM frequency) and the different parameters (spoken proficiency, aspects of formal instruction attended, ISLL, motivation). Change or lack thereof in the system's components from one time-point to the next was then studied alongside changes or lack thereof in the system's

parameters to identify dynamic processes and emergent outcomes (based on the "dynamic ensemble") and possible links were drawn. To assist in this process, the results of previous group-level analysis were consulted, as they had statistically and qualitatively indicated the strength of the relationship between DM use and each parameter for the whole sample (RQ3, RQ4). The researcher sought to, firstly, identify when parameters might have acted as attractors, allowing the system to stabilise and settle in an attractor state (lack of substantial change). Secondly, it was important to identify changes in key parameters that accompanied changes in the system's components, possibly inducing the system to move out of its attractor state. Possible key events in the participant's life during the study, as reported in the interviews, were taken into consideration as they could have constituted perturbations to the system causing a phase transition. Consistent with the reporting of individual system behaviour in CDST research, the summary of results for RQ5 (Section 5.6.5) is presented using CDST terminology (see Table 4.10 above for reference).

4.8. Summary

This chapter provided a description of the methodology implemented in this study. A longitudinal, mixed-method design was implemented drawing on CDST. The study of DM development and the factors chosen under examination (spoken proficiency, formal instruction, ISLL, motivation) was situated in the Greek EFL context, known for its exam-centredness. Ethical guidelines were followed given the involvement of underage human participants. Data from a sample of 52 students and 4 teachers from 4 private language schools in Patras and Athens (Greece) were gathered and analysed iteratively at four time-points over a 5-month period during an academic year. Based on recommendations that arose from a pilot study, instruments for data collection were speaking activities, questionnaires, and semi-structured interviews (for student data); lesson audio-recordings and photographs of instructional material (for teacher and instructional material data). The chapter also described the processing of data for DM coding and the factors of spoken proficiency, ISLL and motivation, which was a necessary step before data analysis. Intra- and inter-coder reliability for DM coding and inter-rater reliability for the scoring of spoken proficiency was achieved. Quantitative data analysis was carried out through the employment of Generalized Linear Mixed-effects Modelling, following the recommendation of SLA scholars for appropriate statistical techniques in longitudinal research. Thematic qualitative text analysis was used both at the processing stage (to

prepare qualitative data for quantitative analysis) as well as in qualitative analysis in order to supplement the statistical results. The following chapter presents the results of the analysis.

Chapter 5. Results

This chapter presents the quantitative and qualitative findings that address each RQ. The contribution to the existing literature is then discussed in Chapter 6.

5.1 RQ1. Learners' DM use

RQ1 asked: What are the characteristics of DM use in Greek adolescent EFL learners' spoken discourse with regard to the following markers: *so, well, just, like, I don't know, actually/in fact, you know, I mean, sort of/kind of,* and the category of general extenders? This section presents the results of quantitative analysis based on each time-point separately as well as the average time measure (average across Time 1 – Time 4).

Table 5.1 depicts the mean and SD for learners'[28] DM range and overall DM frequency for each time-point and on average (mean and maximum across Time 1 – Time 4). Overall, students exhibited narrow DM range in their discourse, employing a mean of around 3 out of 10 DM types. Despite the sample's narrow mean DM range, almost half of the DM types under examination were employed on average over the course of the study, as indicated by the maximum average value (M=4.49, SD=2.38). Regarding DM frequency, students employed on average 14.07 DM tokens per 1000 words. The majority of students employed a lower number of DM tokens, whilst fewer students employed a higher number of DM tokens, as evident from the skewed distribution (Appendix E).

Table 5.1 Learners' DM range and overall DM frequency.

Variable	Time M (SD)/Min-Max					
	Time 1	**Time 2**	**Time 3**	**Time 4**	**Average across T1-T4**	**Maximum across T1-T4**
DM Range	2.63 (2.01) 0.00-8.00	2.45 (1.67) 0.00-6.00	2.29 (1.84) 0.00-7.00	2.49 (1.84) 0.00-8.00	2.47 (1.58) 0.00-6.50	4.49 (2.38) 0.00-10.00
Overall DM frequency	14.23 (11.58) 0.00-51.64	13.70 (10.36) 0.00-38.19	14.22 (11.72) 0.00-50.77	14.60 (12.24) 0.00-46.51	14.07 (9.77) 0.00-38.34	20.76 (12.62) 0.00-51.64

Note. T1-T4=Time 1 through Time 4.

[28] As explained in Section 4.7.1, one extreme outlier was excluded from all analyses, which were therefore conducted on N=51 students.

Friedman's tests were then conducted to assess any differences in the use of textual, interpersonal and textual-interpersonal markers. Table 5.2 shows the mean and SD for textual, interpersonal and textual-interpersonal DM frequency for every time-point and on average. The results showed that, overall, there were significant differences in the frequency of textual, interpersonal and textual-interpersonal markers (Average across T1-T4: $\chi^2(2, 51)=56.50$, $p<.001$). Wilcoxon Signed Rank tests were conducted as post-hoc tests (with Bonferroni correction, p=.017) to follow up this finding. On average, students employed more textual DMs than both interpersonal and textual-interpersonal DMs (all p's<.001); moreover, they employed more interpersonal DMs than textual-interpersonal DMs (p<.001). A similar pattern was observed with regard to the four time-points.

In other words, students overall used more DMs that signalled a textual function (i.e. to manage their discourse, such as initiate a turn, elaborate on a preceding utterance, signal a topic shift, reformulate an utterance after an instance of dysfluency) and employed fewer DMs that signalled an interpersonal function (e.g. to hedge a strong opinion, mildly contradict the interlocutor, mitigate face threats). DMs which signalled both a textual and interpersonal function (e.g. indexing the end of the speaker's response while signalling to the hearer to take the floor) were the least used.

Table 5.2 Friedman's test for frequency of textual, interpersonal, and textual-interpersonal functions.

Time	Categories of DM frequency M (SD)/Min-Max			χ^2 (df)	p-value
	Textual markers	Interpersonal markers	Textual-interpersonal markers		
Time 1	7.60 (8.48)[a] 0.00-35.21	5.22 (5.28)[a] 0.00-19.31	1.40 (2.85)[b] 0.00-13.64	29.56 (2)	<.001
Time 2	8.68 (7.99)[a] 0.00-35.02	3.17 (4.44)[b] 0.00-16.00	1.86 (2.85)[b] 0.00-12.71	27.07 (2)	<.001
Time 3	9.03 (8.09)[a] 0.00-27.21	3.71 (5.05)[b] 0.00-28.70	1.48 (2.60)[c] 0.00-11.67	39.30 (2)	<.001
Time 4	9.53 (8.05)[a] 0.00-31.37	3.25 (5.12)[b] 0.00-18.73	1.82 (2.27)[b] 0.00-7.75	52.37 (2)	<.001
Average across T1-T4	8.71 (6.57)[a] 0.00-21.74	3.79 (3.65)[b] 0.00-13.66	1.57 (1.59)[c] 0.00-5.62	56.50 (2)	<.001

Note. a/b/c indicate post-hoc test differences that are significant at the new adjusted (Bonferroni) level (.05/3=new alpha level .017) – different letters indicate significant difference; same letters indicate no significant difference; T1-T4=Time 1 through Time 4.

Spearman rho correlations were conducted to examine the relationship between DM range and DM frequency. Table 5.3 shows the correlation coefficients between DM range and overall DM frequency as well as between DM range and the three categories of frequency for each time-point and on average. The results showed that there was a positive, strong correlation between DM range and overall DM frequency (all p's<.001). Moreover, DM range correlated positively strongly with textual DM frequency (all p's<.001), interpersonal DM frequency (all p's<.001) and textual-interpersonal DM frequency (all p's<.008). These results indicate that DM range increased with DM frequency; students who used a wider range of DM types were also likely to employ a larger number of DM tokens, whereas students whose discourse exhibited a narrower range of DM types were likely to use fewer DM tokens.

Table 5.3 Spearman rho correlations between DM range and DM frequency.

DM range	Overall DM Frequency	Textual markers	Interpersonal markers	Textual-interpersonal markers
Time 1	.881***	.767***	.588***	.368**
Time 2	.847***	.627***	.544***	.544***
Time 3	.872***	.753***	.654***	.519***
Time 4	.885***	.750***	.606***	.543***
Average T1-T4	.906***	.821***	.733***	.619***

Note. **p<.01; ***p<.001.

Table 5.4 summarises the use of each of the 10 DMs for the average time measure (see Appendix F, Table 17, for each time-point). The most popular markers, used by the majority of the sample, were *so* (used overall by 92% of students, N=47), *well* (66%, N=34), general extenders[29] (63%, N=32) and *I don't know* (51%, N=26), while *just* was employed by almost half the number of participants (49%, N=25). Of the remaining 5 markers, only around a third of students employed the DMs *actually/in fact* (37%, N=19), *like* (29%, N=15) and *kind of/sort of* (27%, N=14), while the least popular were *I mean* (20%, N=10) and *you know* (14%, N=7).

[29] The following general extenders were recorded in learners' discourse (from most to least common): *and stuff, or something, and all this stuff, something like that, and all that, etcetera, and this stuff, this stuff, all this stuff, and things, and those things, and things like that, and all this, and everything, and whatever, and so on, all of that stuff, and all this kind of stuff, or so, things like this, or whatever, whatever, something like this.*

A similar pattern was observed in the frequency with which each of the 10 DM types were employed in students' discourse, with *so* (M=4.82, SD=3.33) and *well* (M=3.72, SD=4.49) being by far the most frequently employed DMs, followed by *just* (M=1.26, SD=2.04), general extenders (M=0.86, SD=1.18), *like* (M=0.85, SD=1.72), *I don't know* (M=0.78, SD=1.03), *actually/in fact* (M=0.70, SD=1.16), *you know* (M=0.37, SD=1.15), *kind of*/sort of (M=0.33, SD=0.70) and *I mean* (M=0.30, SD=1.03).

As becomes evident, the 10 DMs were not evenly distributed in students' discourse: *so* and *well* were the two dominant DMs, used most often and by most students, whereas all remaining DMs were less frequent and common. Especially *kind of/sort of*, *you know* and *I mean* were the least used.

Table 5.4 Learners' use of the 10 DM types for the average time measure.

DM	Tokens (average)	Tokens (total)	Frequency M(SD)	N (%)
so	93.00	372	4.82 (3.33)	47 (92.2)
well	70.75	283	3.72 (4.49)	34 (66.7)
just	26.75	107	1.26 (2.04)	25 (49.0)
like	19.25	77	0.85 (1.72)	15 (29.4)
I don't know	14.75	59	0.78 (1.03)	26 (51.0)
actually/ in fact	12.50	50	0.70 (1.16)	19 (37.3)
you know	9.25	37	0.37 (1.15)	7 (13.7)
I mean	6.50	26	0.30 (1.03)	10 (19.6)
sort of/ kind of	8.00	32	0.33 (0.70)	14 (27.5)
General extenders	19.00	76	0.86 (1.18)	32 (62.7)
Total		**1,119**		**48 (94.1)**

Note. **Tokens (average)**- average of the raw number of tokens across Time 1-Time 4; **Tokens (total)**- total raw number of tokens across Time 1-Time 4, **Frequency M(SD)-** mean relative number of tokens per 1,000 words of students speech across Time 1-Time 4; **N(%)**- total number of students who used the marker across Time 1-Time 4.

5.1.1 Sub-groups of learner DM users

As discussed in Section 4.7.1.1, for descriptive purposes, students were categorised into different sub-groups based on their DM range: considerable, moderate, limited, and non-DM users. Table 5.5 shows the categorisation of students into the four DM user sub-groups at every time-point and the average time measure.

Table 5.5 DM range of the DM user sub-groups.

DM user sub-group	DM range (Min-Max)	
	At each of the four time-points	Average across T1-T4 (average time measure)
Non-DM users	0	0.00
Limited DM users	1 – 2	0.50 – 2.00
Moderate DM users	3 – 4	2.25 – 4.00
Considerable DM users	5 – 10	4.25 – 6.50

Figure 5.1 shows that at all four time-points, most participants were either limited DM users (35.3%-49.0%)[30] or moderate DM users (17.5%-31.4%), whereas fewer students were either non-DM users (9.7%-17.6%) or considerable DM users (11.8%-15.7%). Similar distribution occurred for the average time measure. It is important to point out that the sub-groups did not consist of the same individuals at every time-point. For example, S10 was a considerable DM user at Time 1 because of her broad DM range (i.e. 6 DM types) but belonged to the moderate DM user sub-group at Time 2 because of her narrower DM range (i.e. 3 DM types). However, it must be noted that "high jumps" or "low falls" from one sub-group to another were rare. For instance, no participant who was a non-DM user at a certain time-point advanced to the sub-group of considerable DM users at a subsequent time-point and vice versa. Rare cases are explored in Section 5.6.

[30] The range indicates the range of the percentage of participants who belonged to each DM user sub-group at any of the four time-points.

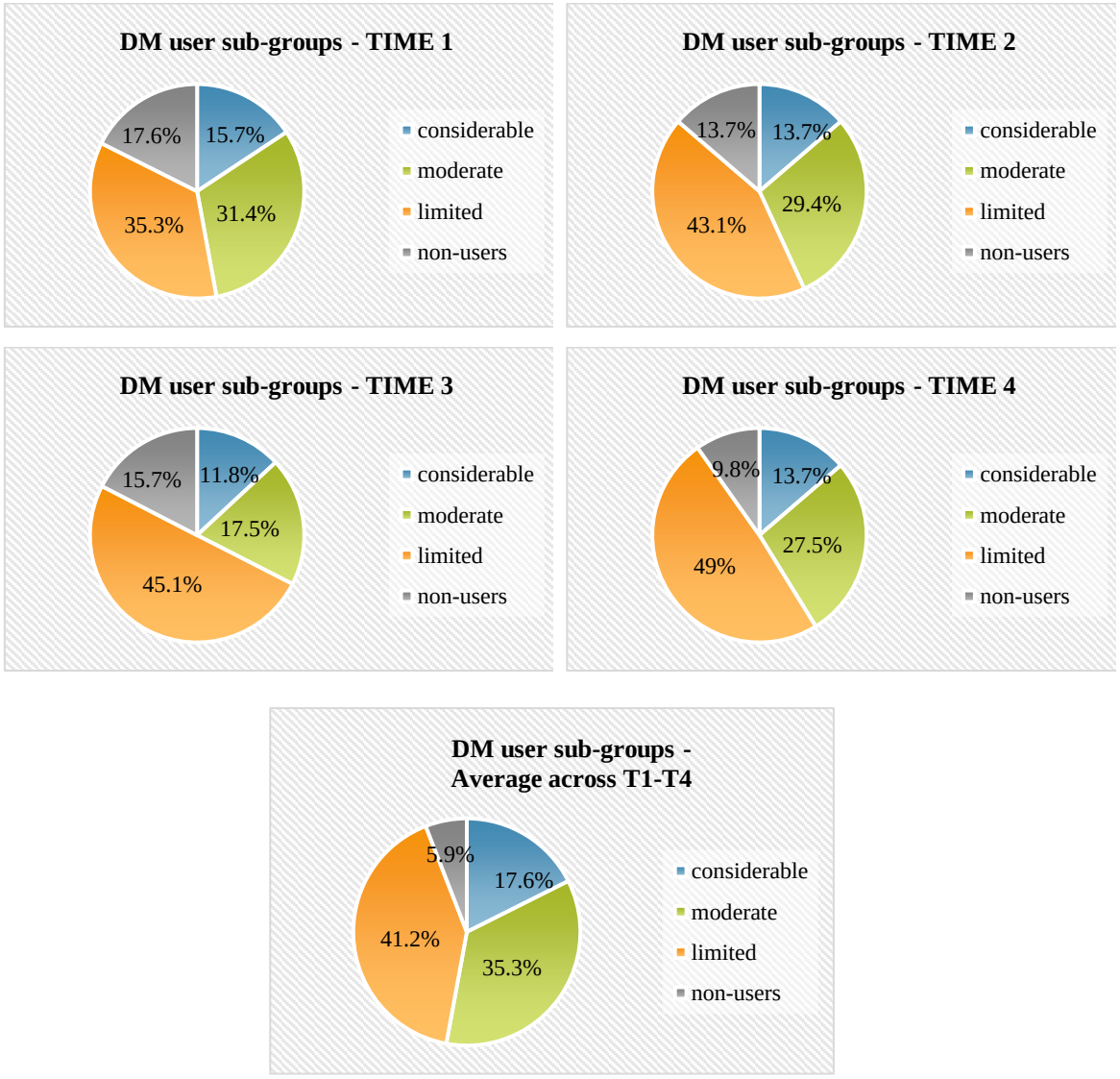


Figure 5.1 Percentage of students in each DM user sub-group at each time-point and the average time measure.

Kruskal-Wallis tests were conducted to assess differences in the DM use between the four DM user sub-groups in order to corroborate the categorisation process of participants based on DM range. Table 5.6 presents the mean and SD for DM range and overall DM frequency for the four DM user sub-groups for each time-point and on average. The results showed that at all time-points and on average the four sub-groups differed with regard to DM range and overall DM frequency (all p's<.001), with the expected significant dose-response relationships between sub-group types and respective DM use at post-hoc level (corrected for Bonferroni, p=.008). The analyses were also conducted for each time-point and the results revealed similar patterns of differences in DM use, respectively.

Table 5.6 Kruskal-Wallis tests for DM range and overall DM frequency of the DM user sub-groups.

DM use	DM user sub-groups M (SD)				χ^2 value
	Considerable DM users (N=6-8)	Moderate DM users (N=14-16)	Limited DM users (N=18-25)	Non-DM users (N=5-9)	
DM Range					
Time 1	6.13 (1.25)[a]	3.38 (0.50)[b]	1.72 (0.46)[c]	0.00 (0.00)[d]	47.34***
Time 2	5.43 (0.53)[a]	3.33 (0.49)[b]	1.68 (0.48)[c]	0.00 (0.00)[d]	46.30***
Time 3	5.83 (0.98)[a]	3.50 (0.52)[b]	1.43 (0.51)[c]	0.00 (0.00)[d]	45.63***
Time 4	6.00 (1.41)[a]	3.29 (0.47)[b]	1.56 (0.51)[c]	0.00 (0.00)[d]	44.70***
Average	5.17 (0.75)[a]	2.79 (0.51)[b]	1.38 (0.51)[c]	0.00 (0.00)[d]	44.25***
Overall DM frequency					
Time 1	32.48 (9.86)[a]	17.52 (6.21)[b]	10.31 (5.48)[c]	0.00 (0.00)[d]	37.89***
Time 2	30.07 (6.96)[a]	17.34 (5.30)[b]	10.38 (7.08)[c]	0.00 (0.00)[d]	35.42***
Time 3	34.79 (8.76)[a]	19.64 (6.53)[b]	10.51 (6.91)[c]	0.00 (0.00)[d]	35.79***
Time 4	33.90 (9.26)[a]	20.69 (9.98)[b]	8.70 (5.07)[c]	0.00 (0.00)[d]	35.76***
Average	28.13 (7.26)[a]	15.90 (5.95)[b]	8.49 (5.77)[c]	0.00 (0.00)[d]	31.64***

Note. ***p<.001; a/b/c/d indicate post-hoc test differences that are significant at the new adjusted (Bonferroni) level (.05/6=new alpha level .008) – different letters indicate significant difference; same letters indicate no significant difference.

Kruskal-Wallis tests were also conducted to assess any difference in the frequency of the 10 DMs under examination between the DM user sub-groups. Table 5.7 presents the mean and SD for each marker for the sub-groups of limited, moderate and considerable DM users[31] for the average time measure and Figure 5.2 provides a visualisation of the frequency of the 10 DMs in the discourse of the three DM user sub-groups.

All groups used the markers *so* and *well* predominantly. Limited users made limited use of all remaining markers; in particular, the DMs *like*, *you know*, *I mean,* and *kind of/sort of* were almost absent from their discourse. Moderate users tended to use the remaining markers more but were limited in their employment of *I mean* and *kind of/sort of* and did not use the DM *you know*. Considerable users were frequent in their use of most DMs, with *just*, *like*, *you know* and general extenders being the most frequently employed after *so* and *well*. Contrary to limited and moderate DM users, considerable DM users had more even distribution of the remaining markers.

[31] The sub-group of non-DM users was not included in this analysis since they did not employ any DM.

As expected, there were significant differences in the use of most markers among the three DM user sub-groups (most p's<.028), supporting the process of categorisation of DM users. However, there were no significant differences among the three sub-groups in the use of *I don't know* and *actually/in fact* (all p's>.110), suggesting firstly, that these two markers were used similarly across all three DM user sub-groups and secondly, that these two markers did not aid particularly in the categorisation process of DM users.

Mann-Whitney U tests were conducted as post-hoc tests (with Bonferroni correction, p=.017) to follow up significant findings. Most differences lay between considerable DM users and limited DM users (most p's<.012), meaning that most markers were used to a higher extent by the former and to a lower extent by the latter. For the DMs *like* and *you know* there were particular differences among the three sub-groups, as indicated by high effect-sizes of Kruskal-Wallis results (η^2=.37 and η^2=.42, respectively). Post-hoc tests showed that considerable DM users used more tokens of *like* (Md=2.56, IQR=2.93) and *you know* (Md=1.17, IQR=3.03) than moderate DM users (*like*: Md=0.00, IQR=0.75; *you know*: Md=0.00, IQR=0.00, all p's<.006) and limited DM users (*like*: Md=0.00, IQR=0.00; *you know*: Md=0.00, IQR=0.00, all p's<.006). In other words, the DMs *like* and *you know* distinguished considerable DM users the most from the rest of the sub-groups.

Table 5.7 Kruskal-Wallis tests for the frequency of the 10 DMs in the DM user sub-groups.

DMs	DM user sub-groups M (SD)			χ^2 value	η^2 value
	Considerable DM users (N=9)	Moderate DM users (N=18)	Limited DM users (N=21)		
so	6.70 (3.10)[a]	5.73 (3.27)	3.92 (2.86)[b]	8.645*	.10
well	6.53 (4.70)[a]	3.88 (3.79)	2.91 (4.79)[b]	7.183*	.07
just	3.56 (3.05)[a]	1.40 (1.83)	0.33 (0.59)[b]	12.696**	.18
like	3.13 (2.38)[a]	0.81 (1.52)[b]	0.03 (0.13)[b]	22.097***	.37
I don't know	1.13 (0.96)	1.05 (1.11)	0.50 (0.97)	4.399	.01
actually /in fact	0.88 (1.11)	1.13 (1.51)	0.35 (0.73)	4.417	.01
you know	1.98 (2.12)[a]	0.00 (0.00)[b]	0.06 (0.29)[b]	24.005***	.42
I mean	1.17 (2.23)	0.22 (0.49)	0.05 (0.22)	9.468**	.11
kind of/ sort of	1.19 (1.25)[a]	0.31 (0.45)	0.03 (0.15)[b]	14.019**	.20
General extenders	1.67 (1.51)	1.18 (1.39)	0.36 (0.43)	7.545*	.07

Note. *p<.05; **p<.01; ***p<.001; a/b/c indicate post-hoc test differences that are significant at the new adjusted (Bonferroni) level (.05/3=new alpha level .017) – different letters indicate significant difference; same letters indicate no significant difference.

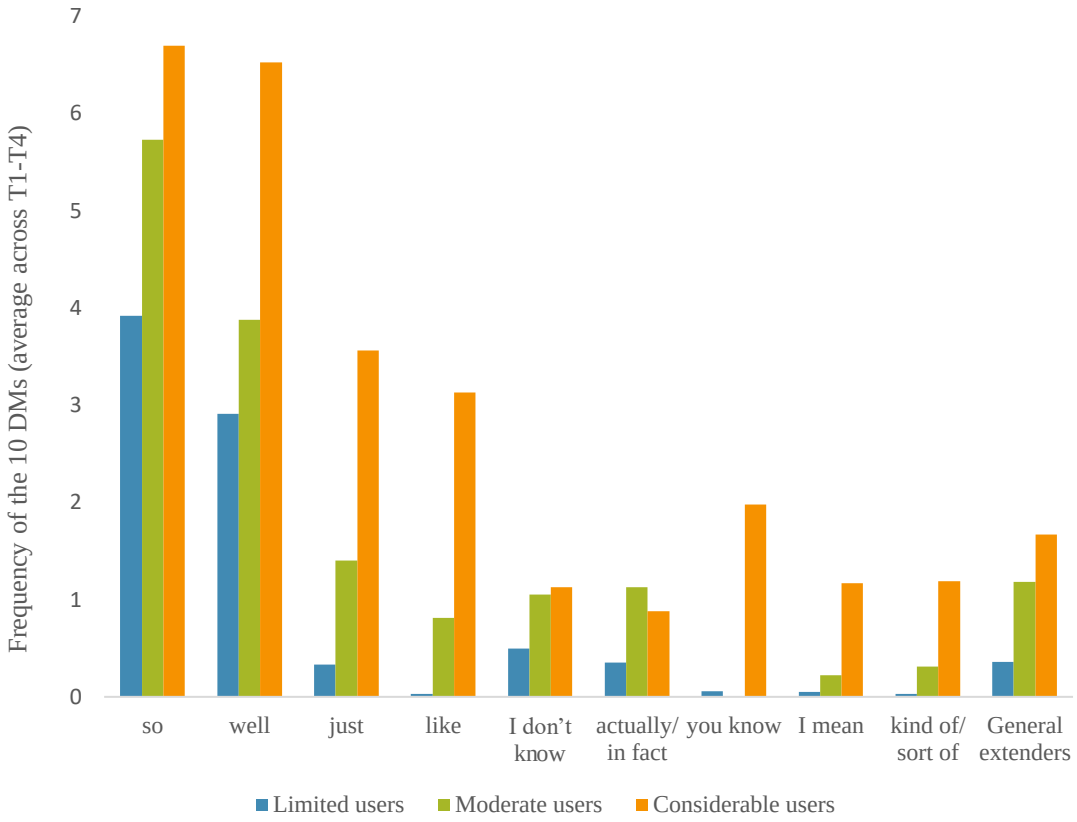


Figure 5.2 Frequency of the 10 DMs in the DM user sub-groups (average time measure).

The following main points can be summarised from the results of data analysis for RQ1 which asked about the spoken DM use of Greek adolescent EFL learners. Firstly, the fact that overall DM frequency rose with DM range, as seen from positive, strong correlations, supported the division of the present sample in the four sub-groups of DM users: considerable, moderate, limited and non-DM users. The majority were either limited or moderate DM users as they employed fewer than half of the markers under examination at each time-point, whereas fewer students belonged to the two ends of the spectrum, either making no DM use or considerable DM use, i.e. employing half or more than half of the markers. Although *well* and *so* were the two dominant DMs across the sample and the DM user sub-groups, considerable DM users displayed a more even distribution of the remaining markers, as opposed to limited and moderate DM users. The markers *like* and *you know* stood out as the two DMs that significantly distinguished considerable DM users from the remainder of the students. Finally, textual markers were used by learners more frequently than interpersonal markers, which, in turn, were employed more frequently than textual-interpersonal markers.

5.2 RQ1a. Teachers' DM use and DM content of instructional material

RQ1a asked: How is the learners' DM use similar to or different from DM use in their teachers' discourse and the DM content of instructional material with regard to the markers under examination? The section first presents the results of quantitative, descriptive analysis for the characteristics of DM use in teachers' discourse and the content of instructional material for the average time measure. The results were then studied alongside the results of RQ1 in order to identify differences between learners, teachers, and instructional material with regard to the use of the 10 DMs, and the differences are summarised.

5.2.1 Teachers' DM use

Table 5.8 depicts the mean and SD for DM range, overall DM frequency and the three categories of frequency for each teacher-participant by class level for the average time measure. The four teachers differed in their DM range and overall DM frequency; Teachers 1 and 2 employed a higher number of DM types and DM tokens than Teachers 3 and 4. In particular, Teacher 1 had the broadest DM range and highest DM frequency in the teacher sample, followed by Teacher 2; both employed 9 out of the 10 DMs under examination. Teachers 3 and 4 had the narrowest DM range and lowest DM frequency, and overall employed half of the examined DMs. Each teacher exhibited similar DM use across the four time-points.

The overall DM frequency of Teacher 1 and Teacher 2 differed depending on the level of class they taught. Both teachers used a lower number of DM tokens when teaching a lower-level class (M=23.80 and M=10.35, respectively), but displayed a higher number of DM tokens when teaching a higher-level class (M=31.05 and M=15.90, respectively).

With regard to the three categories of DM frequency, contrary to student-participants who used more textual than interpersonal DMs, Teacher 1, Teacher 2, and Teacher 3 were recorded using a higher number of interpersonal than textual markers, regardless of the class level. More specifically, these three teachers employed a higher number of DM tokens that signalled their intention to address their students and involve them in the speech event. Examples of interpersonal functions found in teachers' speech were downtoning or emphasis of a proposition, preface of a request or question, and mitigation

of disagreement or criticism. These teachers used fewer DM tokens to organise their discourse (i.e. textual markers), such as to introduce an explication of a preceding segment, to self-repair or to introduce a new sequence in an explanation. The exception was Teacher 4, who employed more textual than interpersonal DMs. Similar to student-participants, the third category of textual-interpersonal markers was the least employed by Teacher 1 and Teacher 2 and was absent from the discourse of Teacher 3 and Teacher 4.

Table 5.8 Teachers' DM use (average time measure).

Teachers (class level)		DM use (average across T1-T4) M (SD) / Min-Max				
		DM range	Overall DM frequency	Textual markers	Interpersonal markers	Textual-interpersonal markers
T1	Lower	7.50 (1.00) 7.00- 8.00	23.80 (3.78) 19.23-28.46	8.52 (2.18) 5.24-9.92	12.62 (2.27) 10.16-15.63	2.54 (0.74) 1.5-3.27
	Higher	7.25 (1.71) 5.00- 9.00	31.05 (1.17) 29.88-32.34	11.14 (2.12) 9.36-14.2	15.29 (2.56) 12.6-18.75	4.62 (1.11) 3.28-5.94
	Total	7.38 (0.48) 7.00- 9.00	27.43 (2.17) 24.57-29.81	9.81 (1.89) 7.30-11.88	13.95 (0.41) 13.55-14.46	3.57 (0.40) 2.97-3.81
T2	Lower	5.25 (1.26) 4.00- 7.00	10.35 (3.35) 5.89-13.94	3.76 (2.81) 1.02-7.47	6.09 (1.40) 4.35-7.77	0.50 (0.54) 0.00-1.25
	Higher	6.25 (1.26) 5.00-9.00	15.90 (2.82) 12.48-18.49	5.26 (1.13) 3.51-6.00	6.48 (2.77) 6.48-12.41	0.51 (0.65) 0.00-1.54
	Total	5.75 (0.96) 5.50- 9.00	13.13 (3.04) 9.19-16.22	4.46 (1.39) 3.51-6.53	8.28 (1.91) 5.42-9.32	0.62 (0.53) 0.25-1.40
T3	Lower	4.00 (0.82) 3.00- 5.00	3.81 (1.59) 2.58-6.06	1.37 (0.30) 1.03-1.72	2.44 (1.57) 0.86-4.54	0.00
T4	Higher	4.50 (0.58) 4.00- 5.00	3.89 (1.21) 2.09-4.77	2.92 (0.87) 1.74-3.57	0.97 (0.41) 0.35-1.26	0.00

Figure 5.3 shows the frequency of each of the 10 markers under examination in the discourse of the four teachers for the average time measure. Similar to the student data, the marker *so* had the highest frequency compared to the remaining nine DM types and was used by all teachers. Other popular DMs that were recorded in the speech of all teachers but had lower frequency than *so* were *just, I mean, actually/in fact* and *well*. The DMs *I don't know*, *you know*, *kind of/sort of* and general extenders were only recorded in the discourse of Teacher 1 and Teacher 2 and were not used by Teacher 3 and Teacher 4. Of these DMs, *you know* and *kind of/sort of* appeared with by far the highest number of tokens in the speech of Teacher 1. The marker *like* was absent from the discourse of all teachers.

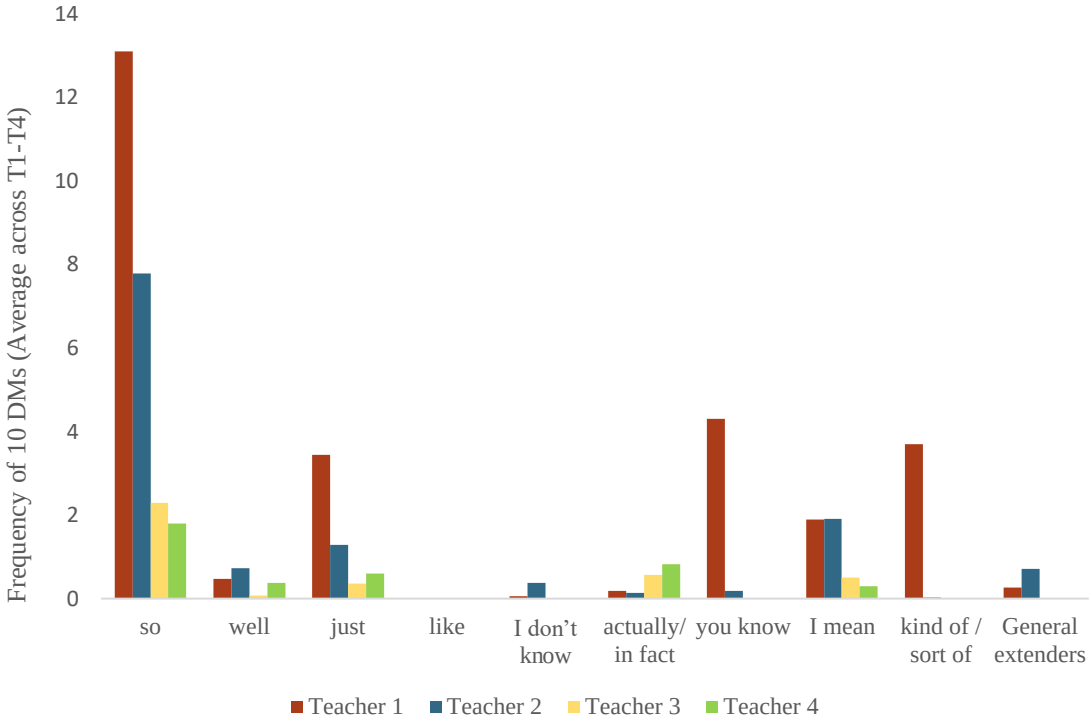


Figure 5.3 Frequency of the 10 DMs in teachers' discourse (average time measure).

5.2.2 DMs in instructional material

Regardless of class level and school, there was higher coverage of DMs in transcripts of audio material in textbooks (100% in all schools and class levels) than in sections devoted to the explicit instruction of the speaking skill (6.3%-53.8% across schools and class levels, see Appendix F, Table 18). Moreover, there tended to be higher total coverage of DMs in instructional material in higher-level classes than lower-level classes.

Table 5.9 shows the DM content of instructional material in each school and by class level, i.e. the total number of DM types and overall DM tokens, as well as textual, interpersonal and textual-interpersonal markers, and markers that could not be assigned a function because they appeared out of context (e.g. in word lists). Regardless of school, instructional material used in higher-level classes contained all 10 DM types, whereas there was narrower DM range (7 DM types) found in lower-level material. Moreover, higher-level material tended to exhibit a higher number of DM tokens than material used in lower-level classes. However, an exception was School B; a higher number of DM tokens was found in material used by the lower-level class, mainly because of high DM frequency in additional pages handed out by the teacher for further speaking practice. Regardless of

school and class level, instructional material contained a higher number of textual than interpersonal markers. Textual-interpersonal DMs had the lowest number of occurrences.

Table 5.9 DM content in instructional material.

School (class level)		Total n of DMs					
		DM range	Overall DM frequency	Textual	Interper.	Textual-interper.	Markers without function
School A	Lower	7	183	109	66	6	2
	Higher	10	310	159	114	22	15
School B	Lower	7	320	154	89	75	2
	Higher	10	256	145	83	15	13
School C	Lower	7	98	46	44	1	7
School D	Higher	10	310	159	114	22	15

Figure 5.4 shows the total number of tokens of each of the 10 DMs in instructional material and by class level. Regardless of class level, the dominant DM type was *so*, followed by *well* and *just*. The remaining markers were less frequent. The DMs *like*, *I don't know* and *kind of*/*sort of* were absent from lower-level material and were also the least encountered DMs in higher-level material.

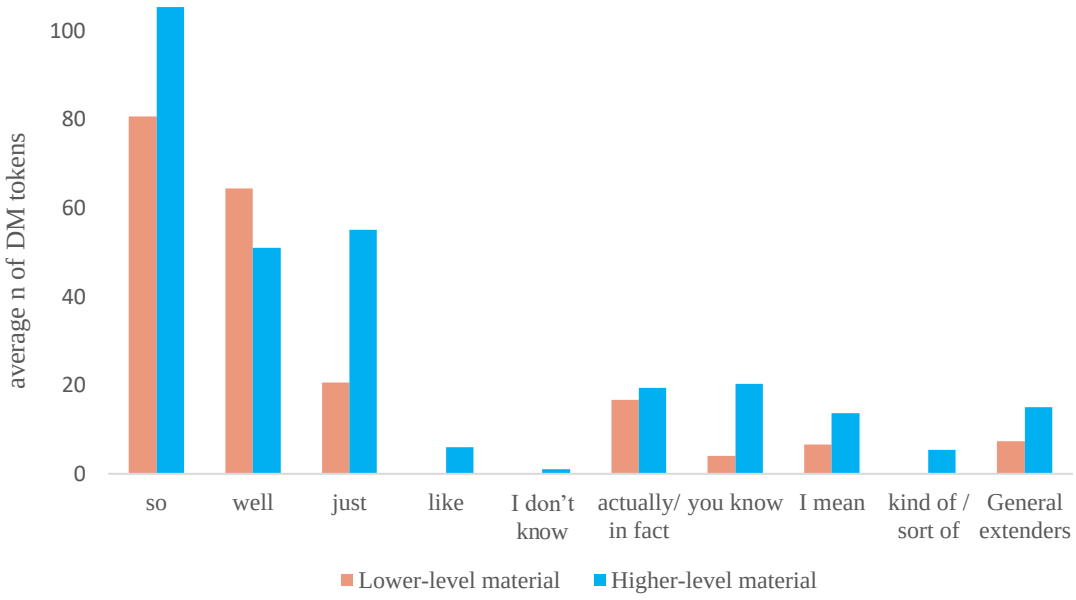


Figure 5.4 Frequency of the 10 DM types in instructional material (average from the 4 schools).

5.2.3 Similarities and differences in DM use between learners, teachers and instructional material

Comparing the results regarding learners' DM use to teachers' DM use and the DM content in instructional material, certain similarities and differences can be noted and are summarised in Table 5.10. Regarding overall DM frequency and DM range, the qualitative comparisons firstly showed a similarity between all three data sources (learners, teachers, instructional material): there was more widespread use of certain markers which were employed with a high frequency (i.e. *well* and *so* in learners' discourse and instructional material; *so* in teachers' discourse), whereas the remaining DMs were employed to a lesser extent and some were even absent from the discourse of some learners, teachers or the content of instructional material (as detailed below). Another similarity regarded the functions signalled: textual-interpersonal markers were the least encountered in all three data sources. A difference is that whereas there was a larger number of textual markers than interpersonal markers in students' discourse and in instructional material, teachers made more frequent use of interpersonal than textual markers.

With regard to the 10 DMs, the prevalent marker and with the highest frequency in all three data sources was *so*. In terms of differences, some students (n=11, 21.6%), particularly considerable DM users, were found to use *so* at the end of their utterance followed by *yes* or *yeah* (i.e. *so yes*, *so yeah*) to signal a textual-interpersonal function (as explained in Section 4.6.1). This combination of words did not occur in instructional material and was only used once by Teacher 1. Further differences were observed with regard to the remaining markers, as certain DMs used by learners were not as frequent or common in the input inside the class and vice versa. More specifically, *well* was the second most common and frequent DM in students' discourse and lower-level instructional material, but it was the least frequent in teacher talk. The category of general extenders was the third most common DM type employed by the majority of students but was found in the discourse of only two of the four teachers and occurred at a low frequency in instructional material. In particular, general extenders that included the word *stuff* (e.g. *and stuff, and all this stuff*) were common and frequent in learner discourse but were absent from teachers' discourse, and only four tokens of *and stuff* were found in the textbooks of School B. Similarly, *like* was present in students' discourse and particularly in the speech of considerable DM users, but was absent from the discourse of all teachers and was

among the three least frequent DMs in higher-level material and absent from lower-level material. Finally, although *kind of/sort of* was among the least frequent and common DMs in learner discourse, the variant *kinda* was only recorded in learner discourse (n=5, 9.8%) and was absent both from teacher talk and instructional material.

Table 5.10 Summary of characteristics of DM use in students' discourse, teachers' discourse and in content of instructional material.

Characteristics	Students	Teachers	Instructional material
Most frequent category of functions	textual	interpersonal	textual
Least frequent category of functions	textual-interpersonal	textual-interpersonal	textual-interpersonal
Most common markers (descending)	*so* *well* General extenders	*so* *just* *I mean*	*so* *well* *just*
Least common markers (ascending)	*kind of/sort of* *I mean* *you know*	*you know* *I don't know* General extenders	*like* *I don't know* *kind of/sort of*
Markers that were absent	–	*like* General extenders with the head noun: *stuff*	–
Markers with the highest frequency (descending)	*so* *well* *just*	*so* *just* *I mean*	*so* *well* *just*
Markers with the lowest frequency (ascending)	*I mean* *kind of/sort of* *you know*	*I don't know* General extenders *well*	*I don't know* *sort of/kind of* *like*

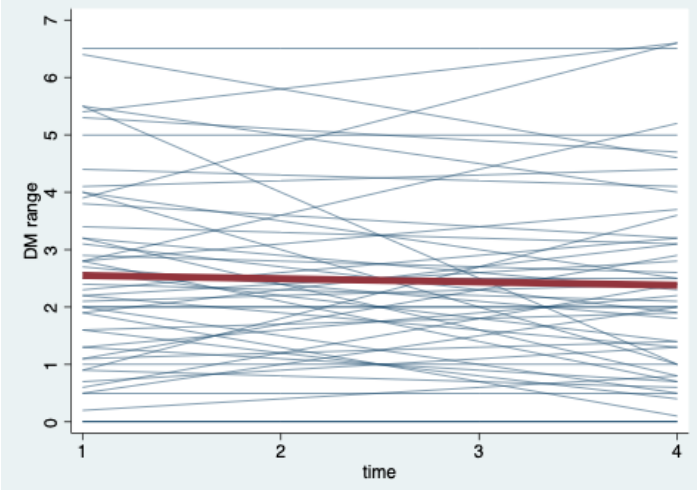
It was not the aim of the present study to examine whether students were explicitly taught the use of the 10 DMs. However, some similarities in the DM use of learners, teachers and the content of instructional material suggest that teachers and instructional material might have, to some extent, constituted models for students' DM use. Despite the similarities, the existence of differences, particularly in the use of individual markers, indicate that not all learners' DM use entirely reflected the DM input in formal instruction settings. This preliminary finding will be further examined in Sections 5.4.2 and 5.5, where quantitative analysis was conducted to reveal with statistical significance whether aspects of formal instruction, such as class-level and school, significantly impacted learners' DM use either in isolation (RQ3) or in combination with other factors (RQ4). As already seen in Sections 5.2.1 and 5.2.2, the DM use of two of the teachers and the DM content in instructional material differed depending on class-level (lower, higher); moreover, teachers in Schools A and B had broader DM range and higher overall DM frequency than teachers in Schools C and D. Therefore, the effect of class-level and school attended on learners' DM use remains to be examined.

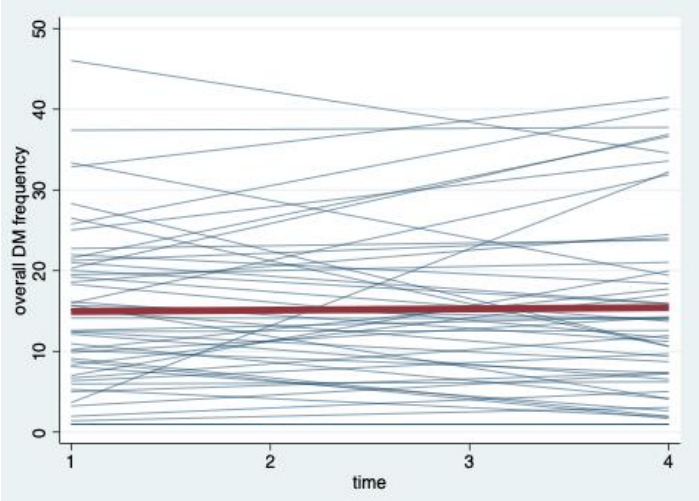
5.3 RQ2. Learners' DM use over time

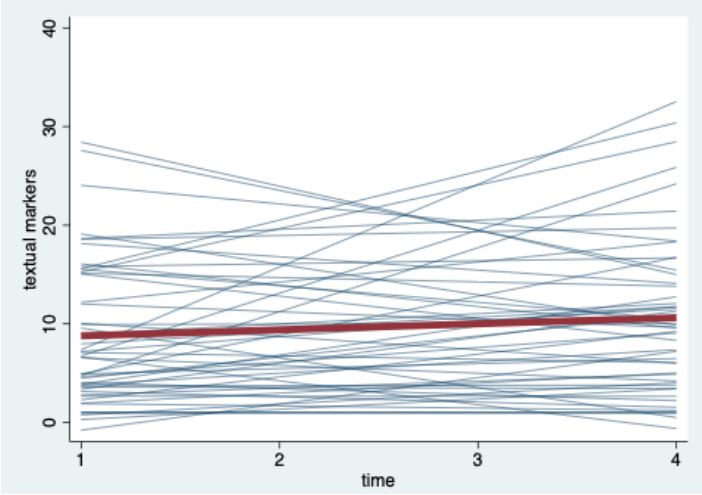
RQ2 asked: How does Greek adolescent EFL learners' DM use change over time? Five random-intercept Generalized Linear Mixed Models (GLMMs) were fitted with each of the five aspects of DM use as the dependent variable, and time (linear) added as a fixed effect. The results revealed no significant effect of time for any aspect of DM use: DM range (β= –.01, SE=.03, p=.711), overall DM frequency (β= –.01, SE=.03, p=.712), textual DM frequency (β=.05, SE=.04, p=.271), interpersonal DM frequency (β= –.08, SE=.06, p=.213) and textual-interpersonal DM frequency (β= –.05, SE=.04, p=.302) (see Appendix F, Table 19, for all models).

The mean group trajectory and individual trajectories were plotted on a timeline spanning the four time-points. Figure 5.5 depicts a flat group trajectory (bold trendline) for every DM aspect, indicating no significant change over time, i.e. learners' DM use showed no linear increase or decrease, acceleration or deceleration. Although not all individual trajectories (faded trendlines) appeared to follow the group pattern, individual variation in rate of change was not such to achieve statistical significance. Section 5.6 will look in greater depth into individual cases who followed or deviated from the group pattern.

Based on the results regarding the effect of different factors (proficiency, formal instruction, ISLL, motivation) on learners' DM use presented in the following sections (5.4 and 5.5), Chapter 6 will discuss possible reasons why learners' DM use overall showed a flat trajectory over time.


DM range
0
1
2
3
4
5
6
7
1
2
3
4
time


overall DM frequency
0
10
20
30
40
50
1
2
3
4
time


textual markers
0
10
20
30
40
1
2
3
4
time

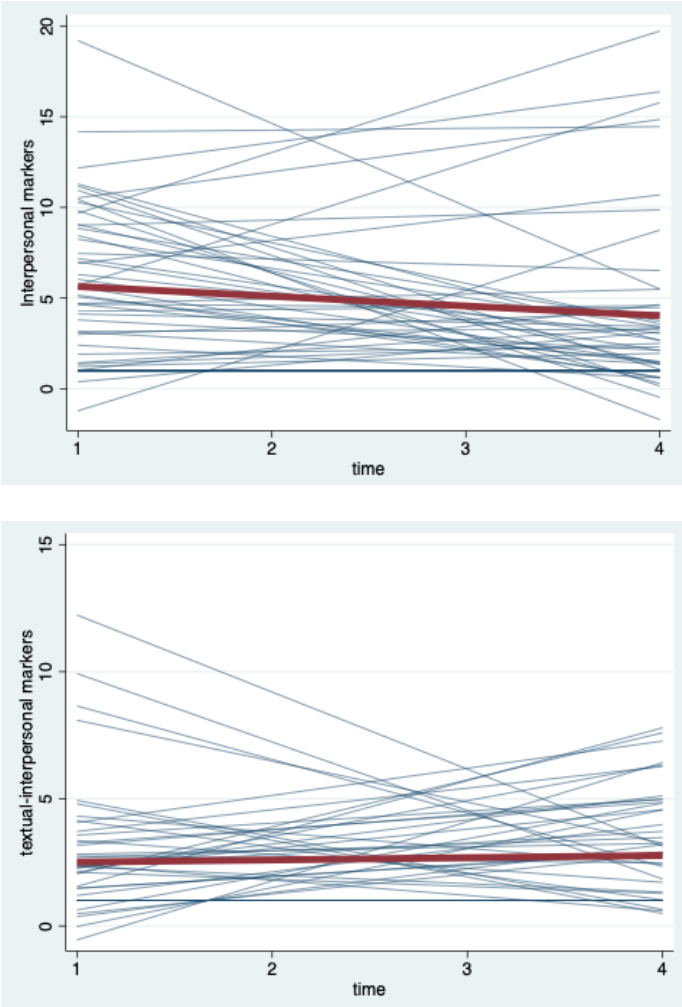


Figure 5.5 Trajectories of DM use over time.
[Group trajectory (bold line) and individual trajectories (faded lines) for DM range (top), overall DM frequency, textual frequency, interpersonal frequency, and textual-interpersonal frequency (bottom) over the four time-points].

5.4 RQ3: Factors associated with learners' DM use

RQ3 asked: How do the factors of spoken proficiency, formal instruction, ISLL and motivation each impact learners' DM use over time? Previous results (Section 5.1.1) showed that students differed in their DM use; those with broader DM use (considerable and moderate DM users) and others with more limited DM use (limited and non-DM users). This section is divided into different sub-sections presenting the results of quantitative and qualitative group-level analyses that assessed the effect of each of those factors on DM use.

5.4.1 Spoken proficiency

This sub-section looks into the factor of spoken proficiency and its effect on students' DM use, and examines assessors' comments regarding participants' spoken performance. Table 5.11 depicts the mean and SD for students' global and independent scores (fluency and coherence, lexical resource, grammatical range and accuracy, and pronunciation) for each time-point. Scores ranged from 5.00 to 8.75, which corresponded to a range from high B1 to borderline C2 CEFR level, based on the IELTS/CEFR conversion map (IELTS, 2021).

Table 5.11 Students' speaking scores.

Variable	Time M (SD)/Min-Max			
	Time 1	**Time 2**	**Time 3**	**Time 4**
Global score	7.01 (0.67) 5.75-8.25	6.93 (0.83) 5.25-8.50	6.84 (0.73) 5.75-8.25	6.78 (0.74) 5.50-8.25
Fluency and coherence	7.14 (0.83) 5.25-8.75	7.06 (0.86) 5.25-8.25	6.86 (0.80) 5.50-8.50	6.92 (0.79) 5.25-8.00
Lexical resource	7.05 (0.77) 6.00-8.75	6.93 (0.86) 5.75-8.00	6.89 (0.82) 5.50-8.00	6.85 (0.76) 5.00-8.50
Grammatical range and accuracy	6.71 (0.76) 6.25-8.25	6.59 (0.88) 5.00-8.75	6.39 (0.83) 5.00-8.00	6.48 (0.80) 5.00-8.00
Pronunciation	6.92 (0.86) 6.00-8.50	6.92 (0.88) 5.00-8.50	6.63 (0.81) 5.25-8.25	6.73 (0.79) 5.00 (8.50)

Five random-intercept GLMMs were constructed with each aspect of spoken proficiency (i.e. global score, fluency and coherence, lexical resource, grammatical range and accuracy, pronunciation) as the dependent variable, and time (linear) added as fixed effect, in order to examine the change in spoken proficiency over time. Table 5.12 summarises the results of five random-intercept GLMMs for the five aspects of spoken proficiency. The results revealed a significant, negative effect of linear time for global scores (β= –.01, SE=.00, p=.001), fluency and coherence (β= –.01, SE=.00, p=.010), lexical resource (β= –.01, SE=.00, p=.041), grammatical range and accuracy (β= –.01, SE=.01 p=.002) and pronunciation (β= –.01, SE=.01, p=.012). Because time (linear) was significant, higher order polynomials were tested. However, including the effects of quadratic time and cubic time resulted in larger AICC values; therefore, linear time was retained. These results indicate that students' global scores, fluency and coherence, lexical resource, grammatical range and accuracy, and pronunciation decreased over time.

Table 5.12 Random-intercept GLMMs for the different aspects of spoken proficiency with time as a fixed effect.

Model	Parameters		β	SE	Test	p	95% CI
Global score	Fixed	Intercept	1.96	.02	t = 118.92	<.001	[1.92, 1.99]
		Time (linear)	–.01	.00	t = –3.31	.001	[–.02, –.01]
	Random	Residual					
		Time 1	.00	.00	Z = 3.91	<.001	[.00, .01]
		Time 2	.01	.00	Z = 4.22	<.001	[.00, .01]
		Time 3	.00	.00	Z = 3.65	<.001	[.00, .01]
		Time 4	.00	.00	Z = 3.40	.001	[.00, .01]
		Intercept (participant)	.01	.00	Z = 4.47	<.001	[.01, .01]
	AICC		–432.28				
Fluency and coherence	Fixed	Intercept	1.97	.02	t = 105.82	<.001	[1.93, 2.01]
		Time (linear)	–.01	.00	t = –2.63	.010	[–.02, .00]
	Random	Residual					
		Time 1	.01	.00	Z = 4.24	<.001	[.00, .01]
		Time 2	.01	.00	Z = 4.03	<.001	[.00, .01]
		Time 3	.01	.00	Z = 3.86	<.001	[.00, .01]
		Time 4	.00	.00	Z = 3.25	.001	[.00, .01]
		Intercept (participant)	.01	.00	Z = 4.41	<.001	[.01, 01]
	AICC		–377.34				
Lexical resource	Fixed	Intercept	1.95	.02	t = 103.65	<.001	[1.92, 1.99]
		Time (linear)	–.01	.00	t = –2.08	.041	[–.02, .00]
	Random	Residual					
		Time 1	.01	.00	Z = 4.32	<.001	[.01, .01]
		Time 2	.01	.00	Z = 4.25	<.001	[.00, .01]
		Time 3	.00	.00	Z = 3.69	<.001	[.00, .01]
		Time 4	.00	.00	Z = 3.22	.001	[.00, .01]
		Intercept (participant)	.01	.00	Z = 4.34	<.001	[.01, .01]
	AICC		–374.40				
Grammatical range and accuracy	Fixed	Intercept	1.91	.02	t = 107.47	<.001	[1.87, 1.94]
		Time (linear)	–.01	.01	t = –3.12	.002	[–.02, –.01]
	Random	Residual					
		Time 1	.00	.00	Z = 3.45	.001	[.00, .01]
		Time 2	.01	.00	Z = 4.23	<.001	[.01, .01]
		Time 3	.01	.00	Z = 3.86	<.001	[.00, .01]
		Time 4	.01	.00	Z = 3.93	<.001	[.00, .01]
		Intercept (participant)	.01	.00	Z = 4.24	<.001	[.01, .01]
	AICC		–342.03				
Pronunciation	Fixed	Intercept	1.94	.02	t = 99.72	<.001	[1.90, 1.98]
		Time (linear)	–.01	.01	t = –2.56	.012	[–.02, –.00]
	Random	Residual					
		Time 1	.01	.00	Z = 4.14	<.001	[.01, .01]
		Time 2	.01	.00	Z = 4.11	<.001	[.01, .01]
		Time 3	.01	.00	Z = 3.73	<.001	[.00, .01]
		Time 4	.01	.00	Z = 3.51	<.001	[.00, .01]
		Intercept (participant)	.01	.00	Z = 4.19	<.001	[.01, .01]
	AICC		–337.32				

Note. β=estimate; SE=standard error; CI=confidence interval; AICC=Akaike Information Criterion Corrected.

Five random-intercept GLMMs were fitted to examine the relationship between spoken proficiency and the five aspects of DM use when time (repeated measures) and individual variation were taken into account. Each model included each of the five aspects of DM use

as the dependent variable and the five aspects of spoken proficiency as fixed effects. However, analysis violated the assumption of multi-collinearity; high correlations among the fixed effects of r's > .900 were found and Tolerance values were < .10 and VIF values were > 5. These values indicate presence of multi-collinearity and hence impede reliability of regression analyses (Pallant, 2013). Because aspects of spoken proficiency were highly correlated with each other, they were not retained in the model, as suggested by Zuur et al. (2010). In other words, it was not possible to distinguish one aspect of spoken proficiency that was the strongest predictor of DM use. Therefore, only the variable of global scores was included as a fixed effect because it encompassed all four independent scores.

The results revealed a significant, positive main effect of spoken proficiency (i.e. global scores) only on interpersonal DM frequency (β=.41, SE=.11, p<.001), indicating that students with higher proficiency tended to use more interpersonal markers (Table 5.13). There was no significant effect of spoken proficiency on any other aspect of DM use (i.e. DM range, overall DM frequency, textual DM frequency and textual-interpersonal DM frequency, all p's>.268).

Table 5.13 Random-intercept GLMM for interpersonal DM frequency with global scores as a fixed effect.

Parameters		β	SE	Test	p	95% CI
Fixed	Intercept	–1.57	.74	t = –2.12	.036	[–3.04, –.11]
	Global scores	.41	.11	t = 3.82	<.001	[.20, .62]
Random	Residual					
	Time 1	1.34	.29	Z = 4.57	<.001	[.88, 2.06]
	Time 2	.32	.10	Z = 3.19	.001	[.18, .60]
	Time 3	.47	.12	Z = 3.83	<.001	[.28, .78]
	Time 4	.90	.23	Z = 4.49	<.001	[.67, 1.61]
	Intercept (participant)	.38	.11	Z = 3.45	.001	[.22, .67]
AICC		578.78				

Note. β=estimate; SE=standard error; CI=confidence interval; AICC=Akaike Information Criterion Corrected.

5.4.1.1 Assessors' comments

Assessors' written comments about each student's performance were examined in order to obtain more insight into (a) the assessment of different types of DM users and (b) the decrease in participants' spoken proficiency over time.

When examining assessors' comments based on the sub-groups of DM users, there was no clear and consistent pattern that distinguished between the different DM user types in

terms of proficiency. At Times 1 and 2, students who received comments that indicated high spoken performance (e.g. “proficient”, “at ease with the language”), and were assigned higher scores, were more likely to be considerable and moderate DM users, whilst at those time-points, students who received comments that indicated lower spoken performance (e.g. “lack of structure”, “grammar errors impede fluency”), and were assigned lower speaking scores, were more likely to be limited or non-DM users. This pattern was less prominent at Times 3 and 4. At those time-points, a larger number of limited DM users received comments such as “great vocabulary” or were characterised as “fluent” and had higher speaking scores. However, at those time-points, there were considerable and moderate users who were “not fluent”, or their discourse presented “several grammar mistakes”, and were assigned lower scores.

Despite a lack of consistent pattern at all time-points, an aspect that appeared to differentiate some considerable and moderate DM users from limited and non-DM users was accent. Accent did not constitute an assessment criterion, but a few considerable (n=6) and moderate (n=3) DM users were the only students to be positively commented on their L2 accents (e.g. “great American accent”, “near native accent”).

Analysis of assessors’ comments also provided insight into the decrease in spoken proficiency over time. On the one hand, the results showed that assessors considered students to be more reserved earlier on in the study (Times 1 and 2), as indicated by the high frequency of words such as “shy”, “not confident”, “anxiety”. Nevertheless, students’ commitment to carry out the speaking activity and their efforts to self-correct were acknowledged (e.g. “Candidate is not very confident, but completes the task well”, Assessor B, Time 1).

On the other hand, assessors considered students to be more relaxed and at ease with engaging in conversation later on in the study (Times 3 and 4), as indicated by the higher frequency of words such as “comfortable”, “expressive” and “chatty”. However, they did not necessarily assess students as more proficient or fluent. On the contrary, this more relaxed behaviour, possibly due to familiarisation with the researcher and the procedure of the activities, appeared, at least based on the assessors’ perceptions, to give way to more grammar and pronunciation mistakes, as well as hesitations while searching for the desired vocabulary to express oneself. Moreover, assessors appeared to be less forgiving that students appeared not to be as committed to the speaking activity itself as they were at the first two time-points (“Candidate tries to communicate, makes jokes but doesn’t expand on

the task", Assessor B, Time 3). Therefore, it could be suggested that decrease in speaking scores over time might have had less to do with actual deterioration of speaking skill and more with the effect that participation in the present study might have had on students' spoken performance.

To summarise, the following key conclusions can be drawn regarding the effect of spoken proficiency on DM use. Firstly, although employing a wider range and larger number of DMs did not necessarily indicate higher spoken proficiency, using more interpersonal markers was statistically related to higher speaking scores. Secondly, considerable and moderate DM users were more likely to be credited for their accent (e.g. American) than limited and non-DM users; however, there were no further qualitative differences in spoken proficiency that consistently distinguished the different DM user sub-groups. Finally, there is the possibility that participation in the present study influenced participants' oral performance potentially resulting in a decrease in speaking scores over time.

5.4.2 Formal instruction

This sub-section presents the results of quantitative analysis that assessed the impact of aspects of formal instruction on learners' DM use. Aspects of formal instruction were amount of formal instruction attended (i.e. number of years of previous formal instruction attended and hours of formal instruction attended per week) and the DM content in teachers' speech and instructional material. The latter was represented by the variables "class-level" and "school" given that teachers' DM use and the content of DMs in instructional material differed depending on class-level and school, as shown in Section 5.2.

Five random-intercept GLMMs were fitted to examine the effect of aspects of formal instruction on the five aspects of DM use when time (repeated measures) and individual variation were taken into account. Each model included each of the five aspects of DM use as the dependent variable, and (a) number of years of previous formal instruction attended, (b) class-level and (c) school as fixed effects. Each student's number of hours of formal instruction attended per week depended on school and class-level attended[32], therefore

[32] Lower-level students at schools A, B and C attended 8 hours of formal instruction per week; higher-level students at schools A and B attended 5 hours and those at school D attended 4 hours.

adding “hours of formal instruction attended per week” to the models resulted in a redundant parameter, and therefore was removed.

The results revealed that there was no significant effect of aspects of formal instruction on any aspect of DM use: DM range, $F(5,33)=.71$, $p=.624$, overall DM frequency, $F(5,45)=.66$, $p=.659$, textual DM frequency, $F(5,44)=.64$, $p=.672$, interpersonal DM frequency, $F(5,45)=.93$, $p=.471$ and textual-interpersonal DM frequency, $F(5,45)=.44$, $p=.816$. More specifically, there was no significant effect of previous years of formal instruction attended (all p’s>.458), school attended (all p’s>.310) nor class-level attended (all p’s>.075) on any aspect of DM use.

These findings corroborate the observation made in Chapter 4, Data analysis (Section 4.7.1.3), that little to almost no variation in DM use was attributable to variation among classes and schools but was attributable to variation among students. As already shown in Section 5.4.1, the factor of spoken proficiency was found to have no effect on most aspects of DM use. The question therefore remains as to whether and how the remaining factors under examination (ISLL, motivation) impacted learners’ DM use. Results are presented in the following sections.

5.4.3 ISLL

The lack of any effect of different aspects of formal instruction on learners’ DM use (Section 5.4.2) points towards the possible influence of out-of-school factors. This section presents the results of analyses on type, purpose and frequency of ISLL on learners’ DM use.

Student-participants were found to engage in 23 informal activities which were identified based on “purpose” of engagement (i.e. only for leisure, only for homework and both for leisure and homework). The activities involved the four language skills[33] outside the class: speaking, writing, listening/watching and reading (see Appendix F, Table 20, for the full list of activities). Activities that involved listening/watching and reading were carried out by all participants, while fewer students reported engaging in writing (N=46, 90.2%) and speaking (N=39, 76.5%).

[33] As acknowledged (Section 4.6.3.1), the extent to which the four skills can be distinguished and isolated from each other can be debated.

This section describes different types of out-of-class activities carried out by the students (N=51) involving each skill, followed by results of mixed-effects modelling to, firstly, examine whether there was any change in ISLL over the course of the study and, secondly, to investigate the impact of ISLL on DM use when time (repeated measures) and individual variation were taken into account. Qualitative findings supplemented the quantitative results by providing more insight into the characteristics of different DM users' ISLL.

5.4.3.1 Speaking skill

L2 speaking was the least performed skill beyond the classroom with 23.5% of participants (N=12) reporting never speaking in English outside the class at any time-point. The remainder of students reported speaking to themselves (11.8%-19.6% of participants) and/or interacting with L1/L2 others (39.2%-52.9%) at some of the four time-points[34].

Figure 5.6 summarises the different characteristics of out-of-class L2 speaking as reported by students. Speaking in English to oneself and/or to an (imaginary) audience usually did not involve the use of technology (e.g. S21: "*Many times, almost always, I speak to myself, but I speak in English* [...] *I imagine that I'm talking to someone*", Time 1). Exceptions were two students who kept an audio diary on their phones, audio-recording themselves speaking in English and a student who reported recording himself on his computer speaking in English for his YouTube followers when preparing videos that he subsequently posted to his YouTube channel.

[34] The range signifies the range of the percentage of participants who reported engaging in an activity at any of the four time-points.

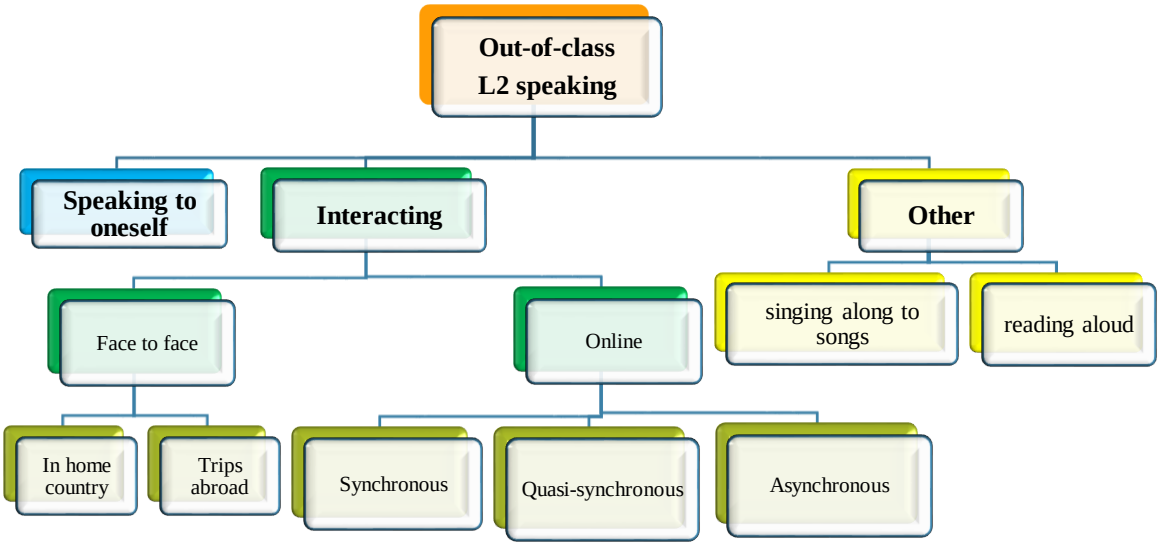


Figure 5.6 Out-of-class L2 speaking.

Interaction with other speakers entailed engaging in spoken communication in English with friends/family who shared the same L1 (Greek) and/or with speakers who did not share the same L1 (non-Greek). For example, S45 reported speaking to her Greek best friend in English: "*Like me, she would rather have English as her mother tongue, instead of Greek, and we talk a lot, at school, but we also send WhatsApp recordings in English all the time*" (Time 1). S7 commented on her one-week school trip to Spain and interactions with L2 others: "*Because it was an Erasmus project, there were other kids from Portugal, Lithuania, Spain and Poland and I spoke to them in English*" (Time 3). Spoken L2 interaction took place online (29.4%-33.3%) or face-to-face (19.6%-29.4%), either in the participants' home country (Greece: 19.6%-29.4%), or, less often, during trips abroad (3.9%).

Online spoken interaction took three forms: synchronous, quasi-synchronous and asynchronous[35]. Synchronous communication occurred when both interlocutors were simultaneously online and engaged in conversation, either through calls or video calls (9.8%-21.6%) or through digital game interactions with co-players (17.6%-21.5%). Quasi-synchronous or asynchronous spoken communication mainly entailed exchanging voice-messages through smartphone apps (consistently 11.8% across time-points). Interaction was quasi-synchronous when both interlocutors were online, but asynchronous when the

[35] Distinction based on Garcia and Jacobs (1999).

individual constructed the voice-message which was listened to by their interlocutor when the latter was next online.

Only a minority (13.7%-21.6%) used smartphones to engage in online L2 interaction, such as making calls, video calls or exchanging voice-messages via apps. Use of means other than smartphones, i.e. computers or speaking face-to-face, was more popular (35.3%-52.9%). For example, students spoke to themselves or had conversations with family/friends without the use of technology, while student-gamers reported speaking to co-players through computers.

When asked about their informal L2 speaking, one participant mentioned singing along to songs (while looking at the lyrics or knowing the lyrics by heart), and two participants mentioned reading aloud from textbooks or novels. Repeating speech (sung or written) rather than forming one's own utterances was not treated as spontaneous L2 speaking. Therefore, these instances were distinguished from speaking to oneself or interacting and were categorised under "Other"[36].

Drawing from the above data, four speaking activities by purpose were identified. Students'[37] engagement in these activities is presented in Figure 5.7. Activities involved speaking to oneself (activity 1 and 2) and interacting (by speaking) with L1/L2 others (activity 3 and 4). Students mostly engaged in spoken interaction with L1/L2 others (activity 3 or 4) compared to speaking to themselves (activity 1 or 2).

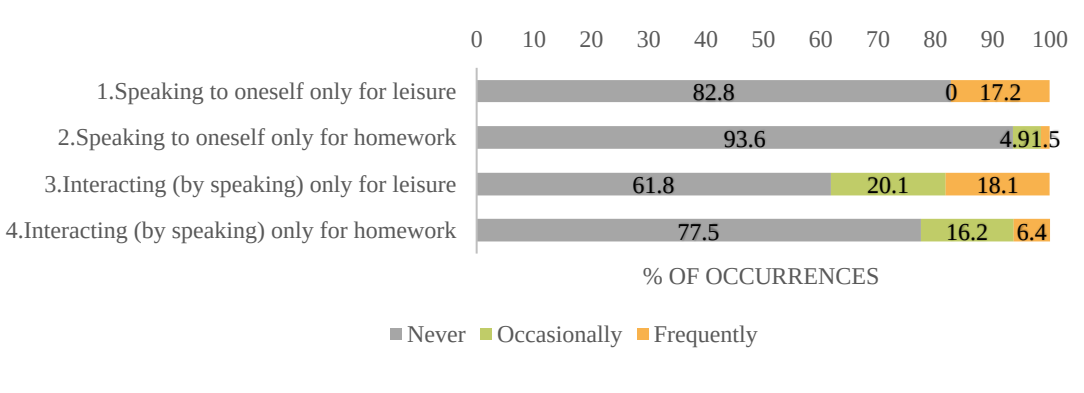


Figure 5.7 Speaking activities (all time-points).

[36] As mentioned in Section 4.6.3.1, additional activities mentioned by only some participants were not included in statistical analysis, in order to ensure comparability among participants and time-points.
[37] The values presented in Figure 5.7 for the descriptives of each activity belong to data from all four time-points, in order to give an overview of activity engagement; therefore, percentages were calculated based on N=204 (i.e. 51 participants x 4 time-points). This will be reported throughout, i.e. in subsequent Figures for the descriptives of each activity.

Students reported speaking either only for leisure (activity 1 or 3) or only for homework (activity 2 or 4). Students who referred to speaking only for leisure (activity 1 or 3) emphasised reasons such as communicating with co-players in digital games in order to advance to the next level, keeping in touch with L1/L2 friends, getting to know other L2 speakers or talking to themselves for fun. Speaking only for homework (activity 2 or 4) was mainly for exam preparation purposes; students spoke to themselves or with family/friends often using speaking exercises from the textbook as prompts.

It was more common to engage in L2 speaking on occasion than on a frequent basis. One-off speaking events were, for example, when a student spoke to L2 others on a trip abroad, or used the language on particular occasions, such as at a Model United Nations[38] school project or to prepare for a particular exam. Speaking on occasion was also mentioned by most student-gamers for whom interacting by speaking with their co-players in English was not common practice but happened rarely. Although 23.5% of students mentioned having L2-speaking relatives who lived abroad, spoken interaction was reported as taking place face-to-face when the latter visited Greece in the summer, a time-period outside the scope of the present study. No student reported communicating with their family at home principally in English.

5.4.3.2 Writing skill

Of the two productive skills (i.e. speaking and writing), L2 writing was the most often carried out, although 9.8% of participants (N=5) reported never engaging in out-of-class writing at any time-point. The remainder of students reported engaging in L2 writing through social media and/or digital games. More specifically, students mentioned chatting online (by writing) to L1/L2 others, quasi-synchronously or asynchronously (51.0%-58.8%), and/or writing on social media (64.7%-66.7%) at some of the four time-points. Writing on social media involved writing comments, status updates or captions under pictures. A writing activity that had not been included in the questionnaire but was

[38] "Model United Nations [...] is an academic or recreational activity in which participants assume the role of national ambassadors or representatives to debate and seek to solve global issues" (https://www.una.org.uk/get-involved/learn-and-teach/model-un-portal)

mentioned subsequently only by two students, and therefore was not included in the analysis, involved lengthier, creative writing, e.g. writing poems and stories in English.

Unlike L2 speaking, the majority of students engaged in L2 writing using smartphones; 49.0%-60.8% of participants used smartphone apps to write outside the class, e.g. chatting to L1/L2 others via apps. A smaller percentage (19.6%-29.4%) used their computers to chat.

Figure 5.8 shows students' engagement in the two identified writing activities presented by purpose. The activities were chatting online (by writing) to L1/L2 others only for leisure (activity 5) and writing on social media only for leisure (activity 6). L2 writing was reported being carried out only for leisure purposes, such as to catch up with friends, communicate with co-players for the purposes of the game, share opinions under videos and post influential quotes; neither activity was associated with homework. Similar to the skill of speaking, more participants mentioned writing on occasion or never, than writing on a frequent basis.

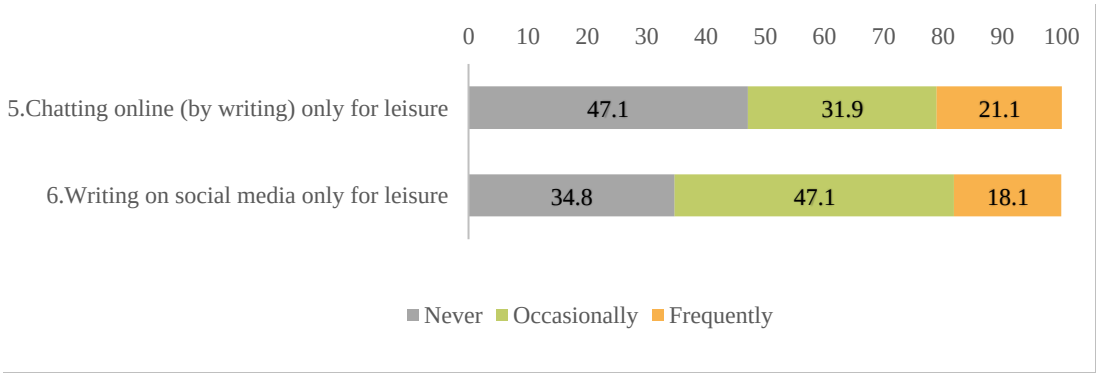


Figure 5.8 Writing activities (all time-points).

5.4.3.3 Listening/watching skill

All participants reported engaging in out-of-class L2 listening/watching at every time-point. L2 listening/watching included listening to English (e.g. songs) and watching material in English with or without subtitles/captions (e.g. videos, TV, films). Playing digital games that involved listening to English (and using captions) was also categorised under the skill of listening/watching.

Almost all participants reported watching videos in English (92.2%-100%), mainly on YouTube and without subtitles. Watching TV/films and playing digital games occurred with subtitles/captions (82.4-88.3%) or without (62.7%-66.7%). Watching with captions or without subtitles/captions was usually preferred to watching with subtitles mainly because of the non- or limited availability of the latter, as mentioned by participants who used free online streaming services or played digital games that were only available with captions. Not using subtitles nor captions particularly when watching TV/films was partly a conscious choice but also shaped by the technology, such as the low quality of captions offered by the source or the lack of their availability in the source (S1: "*When I started using Netflix, there weren't any subtitles*[39] *in Greek, so it started like that and then I got used to it and now I don't even need English subtitles, so I watch everything without subtitles*", Time 1).

Informal L2 listening/watching was often linked to engagement with trending topics, such as online personas and TV-series widely favoured by an adolescent audience. In terms of videos, there was uniform interest for one particular vlogger, the Swedish YouTube comedian PewDiePie, mentioned by the majority of the sample as their favourite YouTuber (62.7%). No participant reported watching language-learning oriented videos. The use of the online streaming service Netflix was another example of engagement with trending topics, as 74.5% of participants reported watching trending TV series particularly appealing to an adolescent audience, such as Riverdale, Stranger Things, Vampire Diaries (e.g. S52: "*I don't watch Greek TV anymore, because all the TV series they're showing are so outdated* [...] *Netflix has all the new series I like*", Time 1).

A listening activity that had not been included in the questionnaire but was subsequently mentioned by a small number of students (13.7%-17.6%) and therefore was not included in the analysis, involved listening to podcasts. Listening to podcasts was usually reported as teacher initiated; students mentioned that their teachers had suggested to download and listen to podcasts available on the BBC website. Possibly because it was teacher- rather than self-initiated, such an activity might not have resonated with all participants' personal interests, as evidenced in the statements of students who used the app but experienced growing disinterest over time (e.g. S18: "*Something I don't do anymore is listening to the BBC podcast* [...] *I find it boring*", Time 4).

[39] When presenting participants' quotes, in order to keep their contributions as close to the original as possible "Greek subtitles" refers to "subtitles", "English subtitles" refers to "captions" and "subtitles" refers to either.

All students reported using their smartphones to listen to/watch material in English, mainly music and videos. Use of other means, i.e. computers and traditional TV, was more popular for TV/film watching (82.4%-88.3%) and playing digital games (51.0%-64.7%). However, a portion of students also watched TV series on the Netflix app on their phones (2.0%-13.7%) and/or played games on their phones (31.4%-35.3%).

Figure 5.9 shows students' engagement in the seven identified listening/watching activities presented by purpose. The activities involved listening to songs (activity 7), watching videos (activity 8 or 9), watching TV/films without or with subtitles/captions (activity 10 or 11) and playing digital games without or with subtitles/captions (activity 12 or 13). Most informal L2 listening/watching activities were reported as being performed only for leisure. Although students acknowledged learning outcomes, leisure was emphasised over formal, learning-oriented practice (e.g. S46: "*Let's be honest, nobody watches PewDiePie to practise English. I watch him because he's funny and the jokes he makes have a hidden meaning*", Time 3). Watching videos both for leisure and homework (activity 9) was also reported but by fewer than half of participants (27.5%-41.2%). Unlike L2 speaking and L2 writing, which were generally carried out on occasion, the majority of students engaged in most L2 listening/watching activities on a frequent basis.

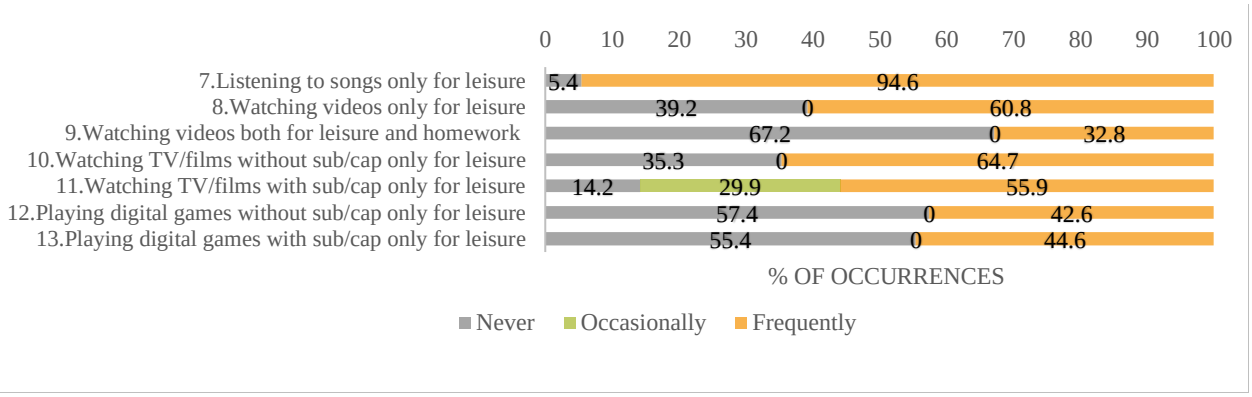


Figure 5.9 Listening/watching activities (all time-points)[40].

[40] "sub/cap" on the figure is abbreviation for "subtitles/captions"

5.4.3.4 Reading skill

As with L2 listening, all participants reported engaging in L2 reading beyond the classroom at every time-point. Students read the following material (presented from most to least popular): song lyrics (88.2%-96.1%), posts and comments on social media (84.3%-94.1%), online articles, blogposts and/or Wikipedia entries (70.6%-80.5%), in-game instructions and/or storylines (60.8%-68.6%), books and/or comics (37.3%-47.1%). Almost all students (86.3%-98.0%) reported using their smartphones to read via social media apps, websites and games downloaded to their phones. Reading that took place only offline (e.g. books) or only using computers was less popular (2.0%-13.7%).

Figure 5.10 shows students' engagement in the ten identified reading activities presented by purpose. The majority of participants read only for leisure; 88.2%-96.1% read song lyrics only for leisure (activity 17), 70.6%-82.4% read posts/comments on social media only for leisure (activity 18) and 60.8%-68.6% read in-game instructions/storylines only for leisure (activity 23). A few individuals combined both leisure and homework when reading; 4.0%-9.8% read books both for leisure and homework (activity 16), 11.8%-13.7% read posts and comments on social media both for leisure and homework (activity 19) and 15.7%-33.3% read online articles/blogposts/Wikipedia entries both for leisure and homework (activity 22). A smaller number of students read only for homework; 5.9%-11.8% read books only for homework (activity 15) and 11.8%-21.5% read online articles/blogposts/Wikipedia entries only for homework (activity 21).

Only three reading activities were carried out by the majority of participants on a frequent basis and these involved reading only for leisure purposes, namely reading song lyrics (activity 17), posts/comments on social media (activity 18) and in-game instructions/storylines (activity 23). The majority of participants never carried out the remaining informal reading activities and only a small number engaged on occasion.

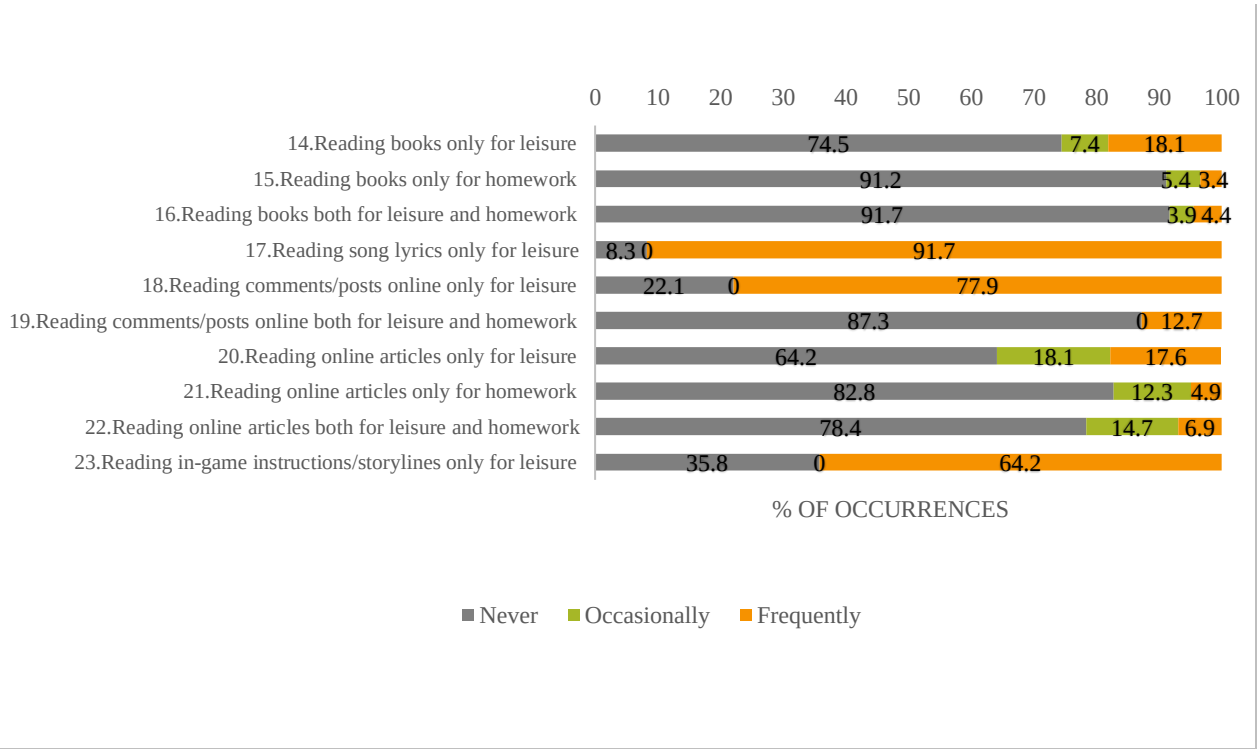


Figure 5.10 Reading activities (all time-points).

5.4.3.5 ISLL over time

Random-intercept GLMMs were constructed with overall engagement in the 23 activities as the dependent variable and time (linear) as a fixed effect, in order to examine if there was any change in overall engagement in out-of-class L2 activities over time. The results revealed that there was no significant effect of linear time in student's ISLL across the time-points (β=.00, SE=.01, p=.990), meaning that there was no statistically significant increase in overall engagement in out-of-class activities throughout the study.

In order to examine any change in engagement over time in each activity separately, random-intercept GLMMs were constructed with engagement in each of the 23 activities separately as the dependent variable and time as a fixed effect. The results revealed that for the majority of activities (18 out of 23), there was no significant effect of time in students' out-of-class L2 engagement across the time-points (all p's>.072), indicating that there was no significant increase or decrease in students' engagement in each of these activities. Whilst there was significant change in student engagement for the other activities over time (5 out of 23; all p's<.035; see Appendix F, Table 21, for the whole list of activities), engagement in those activities was subsequently shown (Section 5.4.3.6) not to be relevant for the study's dependent variable (DM use), and therefore are not reported.

To summarise, descriptive results regarding ISLL revealed that students were overall stable in their ISLL over time, most of which was performed only for leisure purposes. In terms of frequency of ISLL, most activities that were carried out on a frequent basis involved listening/watching only for leisure, followed by reading and writing, whereas speaking only for leisure was carried out frequently only by a minority of students. The effect of ISLL on learners' DM use is examined below.

5.4.3.6 ISLL and DM use

Random-intercept GLMMs were fitted to examine the impact of ISLL on DM use when time (repeated measures) and individual variation were taken into account. Each model had each of the five aspects of DM use as the dependent variable and overall engagement in all 23 activities as a fixed effect. The results revealed that there was a significant, positive effect of overall engagement in all 23 activities only on interpersonal DM frequency (β=.07, SE=.03, p=.011). There was no significant effect of overall engagement in all 23 activities on the other aspects of DM use (i.e. DM range, overall DM frequency, textual DM frequency and textual-interpersonal DM frequency, all p's>.101).

Separate analyses were conducted for overall engagement by purpose; that is, overall engagement in (a) all 15 activities only for leisure, (b) all 4 activities only for homework and (c) all 4 activities both for leisure and homework. Random-intercept GLMMs were fitted with each of the five aspects of DM use as the dependent variable and the three types of overall engagement by purpose as fixed effects. The results revealed that there was a significant, positive effect of overall engagement in all 15 activities only for leisure on interpersonal DM frequency (β=.07, SE=.07, p=.008). There was no significant effect of overall engagement in all 15 activities only for leisure on the other aspects of DM use (i.e. DM range, overall DM frequency, textual DM frequency and textual-interpersonal DM frequency, all p's>.059). Moreover, there was no significant effect of overall engagement in all 4 activities only for homework on any aspect of DM use (all p's>.163), and, similarly, there was no significant effect of overall engagement in all 4 activities both for leisure and homework on any aspect of DM use (all p's>.449).

These results indicated that engaging in more L2 activities outside the class did not have an impact on most aspects of DM use, except for interpersonal DM frequency. Therefore, the

next step was to examine whether engaging in certain activities had a significant effect on different aspects of DM use.

Five random-intercept GLMMs were constructed with each of the five aspects of DM use as the dependent variable and each of the 23 informal activities as fixed effects in order to examine which of the 23 informal L2 activities was the strongest predictor of each aspect of DM use. However, analysis violated the assumption of collinearity for four pairs of activities: speaking to oneself only for leisure and interacting by speaking with L1/L2 others only for leisure (activities 1 & 3); watching videos only for leisure and watching videos both for leisure and homework (activities 8 & 9); playing digital games without subtitles/captions only for leisure and playing digital games with subtitles/captions only for leisure (activities 12 & 13); reading comments/posts on social media only for leisure and reading comments/posts on social media both for leisure and homework (activities 18 & 19). Phi and Cramer's V values were above .500, which indicated a strong relationship between the variables, and therefore presence of collinearity, impeding reliability of regression analyses (Larson-Hall, 2010; Pallant, 2013). In order to address this issue, collinear variables were linearly combined (i.e. added together) into a single variable, following O'Brien (2007) and Neys (2017). This resulted in four new variables that were included in the model in place of the previous eight: speaking/interacting only for leisure (activities 1 & 3 combined), watching videos (activities 8 & 9 combined), playing digital games (activities 12 & 13 combined) and reading comments on social media (activities 18 & 19 combined). This procedure was considered appropriate since it resulted in more parsimonious models. It also made sense from a theoretical point of view, since the combined variables were conceptually similar: each pair of combined activities involved the same language skill.

The results revealed that when all activities were included in the models, there was a significant effect of engagement in certain activities on DM range, overall DM frequency, textual DM frequency and textual-interpersonal DM frequency, but not on interpersonal DM frequency. Tables 5.14 – 5.17 summarise the results of four random-intercept GLMMs for these four aspects of DM use, with engagement in each of the 23 informal L2 activities as fixed effects.

Two activities had a significant, positive effect on aspects of DM use. More specifically, speaking/interacting only for leisure (activities 1 & 3 combined) had a significant, positive effect on DM range ($F(2,82)=6.66$, $p=.002$) and textual-interpersonal DM frequency

($F(2,81)=11.96$, $p<.001$). Furthermore, watching TV/films without subtitles/captions only for leisure (activity 10) had a significant, positive effect on overall DM frequency ($F(1,141)=8.33$, $p=.005$), textual DM frequency ($F(1,123)=5.12$, $p=.025$) and textual-interpersonal DM frequency ($F(1,70)=4.13$, $p=.046$). None of these two activities had a significant effect on interpersonal DM frequency (all p's>.201), and none of the remaining activities had a significant, positive effect on any aspect of DM use (all p's>.059).

One activity had a negative effect on DM use. More specifically, writing on social media (e.g. comments, status updates) only for leisure (activity 6) had a significant, negative effect on textual DM frequency ($F(2,155)=3.17$, $p=.045$).

Table 5.14 Random-intercept GLMM for DM range with ISLL activities as fixed effects.

Parameters				β	SE	Test	p	95% CI
Fixed effects	Intercept			1.01	.40	t=2.53	.013	[.22, 1.81]
	Activities							
	1&3	**speak/interact._leisure**	**Freq.**	**.88**	**.24**	**t=3.60**	**.001**	**[.39, 1.37]**
			Occ.	.16	.17	t=.95	.345	[–.18, .51]
	2	speak._h/w	Freq.	.40	.45	t=.90	.373	[–.49, 1.29]
			Occ.	.26	.20	t=1.27	.207	[–.14, .66]
	4	interact._h/w	Freq.	.17	.26	t=.67	.506	[–.34, .68]
			Occ.	–.04	.14	t=–.26	.799	[–.32, .25]
	5	chat.(writing)_leisure	Freq.	.09	.19	t=.46	.644	[–.28, .46]
			Occ.	.02	.14	t=.15	.880	[–.25, .29]
	6	writing soc.media_leisure	Freq.	–.05	.19	t=–.24	.808	[–.43, .34]
			Occ.	–.11	.13	t=–.84	.404	[–.37, .15]
	7	listen.songs_leisure	Freq.	–.44	.30	t=–1.43	.156	[–1.04, .17]
	8&9	watch.videos	Freq.	–.04	.16	t=–.24	.812	[–1.04, .17]
	10	watch.tv.no.subs_leisure	Freq.	.28	.16	t=1.69	.094	[–.05, .60]
	11	watch.tv.subs_leisure	Freq.	–.06	.14	t=–.45	.652	[–.35, .22]
			Occ.	.05	.17	t=.26	.794	[–.30, .39]
	12&13	playing games_leisure	Freq.	–.10	.14	t=–.69	.490	[–.38, .18]
	14	read.books_leisure	Freq.	–.09	.17	t=–.49	.628	[–.43, .26]
			Occ.	–.57	.27	t=–2.11	.037	[–1.11, –.04]
	15	read.books_h/w	Freq.	.14	.45	t=.31	.757	[–.75, 1.03]
			Occ.	.03	.24	t=.10	.917	[–.44, .49]
	16	read.books_leisure&h/w	Freq.	–.06	.27	t=–.23	.817	[–.58, .46]
			Occ.	.08	.28	t=.27	.789	[–.48, .63]
	17	read.lyrics_leisure	Freq.	.29	.24	t=1.21	.228	[–.18, .75]
	18&19	read.comments	Freq.	–.27	.19	t=–1.41	.161	[–.64, .11]
	20	read.articles_leisure	Freq.	.09	.17	t=.52	.606	[–.25, .43]
			Occ.	–.10	.20	t=–.49	.626	[–.48, .29]
	21	read.articles_h/w	Freq.	–.14	.37	t=–.37	.712	[–.87, .59]
			Occ.	–.03	.20	t=–.14	.890	[–.43, .37]
	22	read.articles_leisure&h/w	Freq.	–.06	.21	t=–.27	.785	[–.47, .36]
			Occ.	–.12	.18	t=–.67	.502	[–.47, .23]
	23	read.instructions_leisure	Freq.	–.13	.15	t=–.85	.396	[–.44, .17]
Random effects		Residual						
		Time 1		.73	.20	Z=3.66	<.001	[.43, 1.24]
		Time 2		.56	.16	Z=3.45	.001	[.32, .99]
		Time 3		.55	.16	Z=3.52	<.001	[.31, .96]
		Time 4		.49	.15	Z=3.23	.001	[.27, .91]
		Intercept (participant)		.21	.09	Z=2.38	.017	[.09, .47]
AICC				423.09				

Note. β=estimate; SE=standard error; CI=confidence interval; AICC=Akaike Information Criterion Corrected; Freq.=engaging in the activity frequently; Occ.= engaging in the activity on occasion, "Never engaging in the activity" was the reference category; leisure=for leisure purposes; h/w=for homework purposes; leisure&h/w=both for leisure and homework purposes; Significant positive fixed effects are in bold.

Table 5.15 Random-intercept GLMM for overall DM frequency with ISLL activities as fixed effects.

Parameters				β	SE	Test	p	95% CI
Fixed effects	Intercept			2.56	.47	t=5.44	<.001	[1.63, 3.49]
	Activities							
	1&3	speak/interact._leisure	Freq.	.53	.32	t=1.68	.097	[–.10, 1.17]
			Occ.	–.08	.18	t=–.46	.643	[–.44, .27]
	2	speak._h/w	Freq.	.28	.48	t=.59	.556	[–.66, 1.23]
			Occ.	.08	.24	t=.35	.724	[–.38, .55]
	4	interact._h/w	Freq.	.06	.30	t=.21	.832	[–.53, .65]
			Occ.	.01	.15	t=.07	.945	[–.28, .30]
	5	chat.(writing)_leisure	Freq.	.17	.24	t=.73	.469	[–.30, .64]
			Occ.	.20	.15	t=1.28	.203	[–.11, .50]
	6	writing soc.media_leisure	Freq.	–.16	.22	t=–.73	.470	[–.60, .28]
			Occ.	–.26	.13	t=–1.96	.052	[–.51, .00]
	7	listen.songs_leisure	Freq.	–.60	.36	t=–1.67	.098	[–1.30, .11]
	8&9	watch.videos	Freq.	.18	.16	t=1.10	.276	[–.14, .50]
	10	**watch.tv.no.subs_leisure**	**Freq.**	**.54**	**.19**	**t=2.89**	**.005**	**[.17, .91]**
	11	watch.tv.subs_leisure	Freq.	–.20	.19	t=–1.06	.292	[–.57, .17]
			Occ.	.11	.21	t=.52	.604	[–.31, .53]
	12&13	playing games_leisure	Freq.	–.06	.16	t=–.34	.731	[–.38, .27]
	14	read.books_leisure	Freq.	.15	.22	t=.69	.494	[–.29, .59]
			Occ.	–.53	.25	t=–2.18	.031	[–1.02, –.05]
	15	read.books_h/w	Freq.	.84	.48	t=1.75	.083	[–.11, 1.78]
			Occ.	–.27	.25	t=–1.11	.269	[–.76, .22]
	16	read.books_leisure&h/w	Freq.	.15	.28	t=.53	.595	[–.41, .71]
			Occ.	.01	.26	t=.02	.982	[–.50, .52]
	17	read.lyrics_leisure	Freq.	.43	.27	t=1.60	.113	[–.10, .96]
	18&19	read.comments	Freq.	–.29	.23	t=–1.27	.207	[–.74, .16]
	20	read.articles_leisure	Freq.	–.01	.19	t=–.04	.971	[–.39, .37]
			Occ.	–.24	.19	t=–1.27	.207	[–.61, .13]
	21	read.articles_h/w	Freq.	–.76	.40	t=–1.90	.059	[–1.55, .03]
			Occ.	.10	.21	t=.45	.656	[–.33, .51]
	22	read.articles_leisure&h/w	Freq.	–.18	.23	t=–.78	.435	[–.64, .28]
			Occ.	–.09	.19	t=–.50	.618	[–.46, .28]
	23	read.instructions_leisure	Freq.	–.12	.17	t=–.68	.498	[–.45, .22]
Random effects		Residual						
		Time 1		.31	.09	Z=3.57	<.001	[.18, .54]
		Time 2		.27	.08	Z=3.33	.001	[.15, .49]
		Time 3		.27	.08	Z=3.29	.001	[.15, .49]
		Time 4		.18	.07	Z=2.65	.008	[.09, .39]
		Intercept (participant)		.47	.12	Z=3.87	<.001	[.29, .79]
AICC				433.33				

Note. β=estimate; SE=standard error; CI=confidence interval; AICC=Akaike Information Criterion Corrected; Freq.=engaging in the activity frequently; Occ.= engaging in the activity on occasion, "Never engaging in the activity" was the reference category; leisure=for leisure purposes; h/w=for homework purposes; leisure&h/w=both for leisure and homework purposes; Significant positive fixed effects are in bold.

Table 5.16 Random-intercept GLMM for textual DM frequency with ISLL activities as fixed effects.

Parameters				β	SE	Test	p	95% CI
Fixed effects	Intercept			2.47	.57	t=4.23	<.001	[1.32, 3.63]
	Activities							
	1&3	speak/interact._leisure	Freq.	.66	.37	t=1.76	.083	[–.09, 1.40]
			Occ.	.07	.23	t=.23	.820	[–.40, .51]
	2	speak._h/w	Freq.	.61	.63	t=.97	.336	[–.64, 1.87]
			Occ.	–.19	.31	t=–.61	.540	[–.80, .42]
	4	interact._h/w	Freq.	.22	.37	t=.59	.554	[–.51, .94]
			Occ.	.29	.20	t=1.48	.141	[–.10, .67]
	5	chat.(writing)_leisure	Freq.	.05	.30	t=.16	.876	[–.55, .64]
			Occ.	.06	.19	t=.29	.770	[–.32, .44]
	6	writing soc.media_leisure	Freq.	–.32	.29	t=–1.11	.271	[–.88, .25]
			Occ.	–.42	.18	t=–2.49	.014	[–.74, –.09]
	7	listen.songs_leisure	Freq.	–.67	.43	t=–1.55	.124	[–1.53, .19]
	8&9	watch.videos	Freq.	.17	.22	t=.77	.442	[–.27, .62]
	10	**watch.tv.no.subs_leisure**	**Freq.**	**.52**	**.23**	**t=2.62**	**.025**	**[.07, .98]**
	11	watch.tv.subs_leisure	Freq.	–.29	.24	t=–1.17	.245	[–.77, .20]
			Occ.	.14	.27	t=.52	.604	[–.39, .67]
	12&13	playing games_leisure	Freq.	–.17	.21	t=–.83	.409	[–.58, .24]
	14	read.books_leisure	Freq.	.36	.27	t=1.31	.192	[–.18, .90]
			Occ.	–.29	.31	t=–.94	.349	[–.90, .32]
	15	read.books_h/w	Freq.	.73	.60	t=1.21	.228	[–.46, 1.92]
			Occ.	.14	.32	t=.45	.651	[–.49, .77]
	16	read.books_leisure&h/w	Freq.	.42	.37	t=1.14	.255	[–.31, 1.14]
			Occ.	.33	.34	t=.99	.322	[–.33, 1.00]
	17	read.lyrics_leisure	Freq.	.31	.33	t=.93	.353	[–.35, .97]
	18&19	read.comments	Freq.	–.40	.28	t=–1.41	.161	[–.96, .16]
	20	read.articles_leisure	Freq.	–.20	.25	t=–.80	.423	[–.69, .29]
			Occ.	–.23	.24	t=–.94	.347	[–.70, .25]
	21	read.articles_h/w	Freq.	–.26	.51	t=–.51	.608	[–1.26, .74]
			Occ.	.08	.27	t=.30	.767	[–.45, .60]
	22	read.articles_leisure&h/w	Freq.	–.53	.31	t=–1.74	.083	[–1.14, .07]
			Occ.	–.19	.25	t=–.77	.445	[–.67, .30]
	23	read.instructions_leisure	Freq.	–.06	.21	t=–.30	.766	[–.48, .36]
Random effects		Residual						
		Time 1		.56	.15	Z=3.61	<.001	[.32, .96]
		Time 2		.39	.12	Z=3.36	.001	[.22, .70]
		Time 3		.34	.11	Z=3.07	.002	[.18, .64]
		Time 4		.52	.15	Z=3.46	.001	[.30, .92]
		Intercept (participant)		.53	.15	Z=3.53	<.001	[.31, .93]
AICC				511.66				

Note. β=estimate; SE=standard error; CI=confidence interval; AICC=Akaike Information Criterion Corrected; Freq.=engaging in the activity frequently; Occ.= engaging in the activity on occasion, "Never engaging in the activity" was the reference category; leisure=for leisure purposes; h/w=for homework purposes; leisure&h/w=both for leisure and homework purposes; Significant positive fixed effects are in bold.

Table 5.17 Random-intercept GLMM for textual-interpersonal DM frequency with ISLL activities as fixed effects.

Parameters				β	SE	Test	p	95% CI
Fixed effects	Intercept			1.57	.56	t=2.80	.006	[.45, 2.69]
	Activities							
	1&3	**speak/interact._leisure**	**Freq.**	**1.22**	**.26**	**t=4.69**	**<.001**	**[.70, 1.73]**
			Occ.	.11	.21	t=.53	.601	[–.31, .53]
	2	speak._h/w	Freq.	–.78	.68	t=–1.16	.249	[–2.12, .56]
			Occ.	.51	.31	t=1.65	.103	[–.10, 1.12]
	4	interact._h/w	Freq.	–.41	.33	t=–1.25	.216	[–1.05, .24]
			Occ.	–.20	.21	t=–.98	.327	[–.61, .20]
	5	chat.(writing)_leisure	Freq.	.24	.31	t=.78	.436	[–.37, .86]
			Occ.	.01	.21	t=.07	.948	[–.39, .42]
	6	writing soc.media_leisure	Freq.	.03	.28	t=.11	.914	[–.53, .59]
			Occ.	–.08	.17	t=–.47	.641	[–.41, .25]
	7	listen.songs_leisure	Freq.	–.44	.40	t=–1.11	.271	[–1.25, .36]
	8&9	watch.videos	Freq.	.09	.25	t=.37	.715	[–.41, .60]
	10	**watch.tv.no.subs_leisure**	**Freq.**	**.36**	**.18**	**t=2.03**	**.046**	**[.01, .72]**
	11	watch.tv.subs_leisure	Freq.	–.42	.25	t=–1.72	.089	[–.91, .07]
			Occ.	–.32	.28	t=–1.13	.261	[–.87, .24]
	12&13	playing games_leisure	Freq.	–.07	.22	t=.80	.427	[–.50, .36]
	14	read.books_leisure	Freq.	.15	.23	t=.66	.515	[–.31, .61]
			Occ.	–.53	.27	t=–1.97	.054	[–1.07, .01]
	15	read.books_h/w	Freq.	1.23	.60	t=2.06	.052	[.05, 2.41]
			Occ.	.44	.33	t=1.35	.181	[–.21, 1.09]
	16	read.books_leisure&h/w	Freq.	.00	.38	t=.02	.991	[–.74, .75]
			Occ.	–.43	.38	t=–1.13	.260	[–1.19, .32]
	17	read.lyrics_leisure	Freq.	.11	.32	t=.35	.730	[–.53, .75]
	18&19	read.comments	Freq.	–.36	.29	t=–1.25	.216	[–.92, .21]
	20	read.articles_leisure	Freq.	.44	.27	t=1.63	.107	[–.10, .97]
			Occ.	–.16	.25	t=–.63	.533	[–.65, .34]
	21	read.articles_h/w	Freq.	–.92	.53	t=–1.75	.083	[–1.96, .12]
			Occ.	.07	.25	t=.27	.789	[–.43, .56]
	22	read.articles_leisure&h/w	Freq.	.36	.33	t=1.09	.277	[–.29, 1.00]
			Occ.	.31	.25	t=1.25	.215	[–.18, .80]
	23	read.instructions_leisure	Freq.	.33	.21	t=1.56	.123	[–.09, .74]
Random effects		Residual						
		Time 1		.40	.11	Z=3.60	<.001	[.23, .69]
		Time 2		1.70	.38	Z=3.49	<.001	[1.10, 2.63]
		Time 3		.35	.10	Z=3.49	<.001	[.20, .61]
		Time 4		.50	.13	Z=3.98	<.001	[.31, .82]
		Intercept (participant)		.09	.06	Z=1.62	.106	[.03, .31]
AICC				517.33				

Note. β=estimate; SE=standard error; CI=confidence interval; AICC=Akaike Information Criterion Corrected; Freq.=engaging in the activity frequently; Occ.= engaging in the activity on occasion, "Never engaging in the activity" was the reference category; leisure=for leisure purposes; h/w=for homework purposes; leisure&h/w=both for leisure and homework purposes; Significant positive fixed effects are in bold.

Pairwise comparisons (with sequential Bonferroni correction) were conducted on aspects of DM use for the activities that showed a significant, main effect (i.e. activities 1 & 3 combined; activity 6; activity 10), in order to examine the extent to which frequency of engaging in these out-of-class L2 activities impacted DM use. The results showed significant differences in DM use depending on frequency of engagement in the activities. More specifically, students who spoke to themselves or interacted (by speaking) with L1/L2 others only for leisure (activities 1 & 3) on a frequent basis had wider DM range than students who engaged in those activities on occasion (β=.72, SE=.23, p=.007) or never engaged in those activities (β=.88, SE=.24, p=.002). Moreover, students who spoke/interacted frequently used more textual-interpersonal markers than those who spoke/interacted on occasion (β=1.10, SE=.26, p<.001) and those who never engaged in these activities (β=1.22, SE=.26, p<.001). There was no significant difference in the DM use between students who spoke/interacted only for leisure on occasion and students who never engaged in the activities (all p's>.345).

Furthermore, students who watched TV/films without subtitles/captions only for leisure (activity 10) on a frequent basis had higher overall DM frequency than students who never watched TV/films without subtitles/captions (β=.54, SE=.19, p=.005). The former used more textual DMs than the latter (β=.52, SE=.23, p=.025) and used more textual-interpersonal DMs than the latter (β=.36, SE=.18, p=.046).

Writing on social media (e.g. comments, status updates) only for leisure (activity 6) gave a tendency for differences in textual DM frequency, with students who wrote on occasion employing fewer textual markers than students who never wrote (β= –.42, SE=.18, p=.014). However, there were no significant differences in textual DM frequency between students who wrote on social media frequently and those who never engaged in the activity (p=.542), nor between students who wrote frequently and those who wrote on occasion (p=.729). Because the results did not reach significance at other levels of frequency of engagement, it was considered that this did not constitute adequate evidence of the negative effect of the activity on DM use to merit further investigation.

The quantitative results for the activities of (a) speaking to oneself or interacting (by speaking) with L1/L2 others only for leisure (activities 1 & 3) and (b) watching TV/films without subtitles/captions only for leisure (activity 10) were in line with descriptive findings when exploring the engagement in activities based on the categorisation of DM users. Students who reported engaging in all three key activities (i.e. activities 1, 3 and 10)

on a frequent basis and who reported doing so consistently throughout the present study were either considerable or moderate DM users.

Of the 10 students who spoke to themselves only for leisure (activity 1) on a frequent basis and/or interacted with L1/L2 others only for leisure (activity 3) on a frequent basis at any of the four time-points, almost all were either considerable or moderate DM users (n=9-10; 90%-100%). Some engaged in spoken communication in English with their Greek friends despite sharing the same L1 (e.g. S11: "*Generally, I speak to all my friends in English. Almost all of them, because not all can understand me very well but with most of them, yes, I communicate in English. It's a little bit weird. I don't know, it comes naturally*", considerable user, Time 2). Others maintained frequent contact with L2 speaking peers from other countries. For example, considerable users S1 and S26 were two cousins who played on the local water polo team and reported that they interacted during their everyday training practice with their team-player who was a transfer from New Zealand and only spoke in English. Participants also reported speaking to L2 others whom they had never met in person. For example, considerable user S15 frequently spoke via Snapchat to an American friend she was initially pen-pals with ("*I would send her a letter in October and receive her response at Christmas* [...] *Afterwards, when I got a smartphone, I downloaded Snapchat and we speak through Snapchat* [...] *I call her at 8 in the evening and it's noon there and she has just gotten back from school*", Time 1).

Students who reported watching TV/films without subtitles/captions only for leisure (activity 10) on a frequent basis (n=32 at Times 1 and 2; n=34 at Times 3 and 4) belonged to all DM user sub-groups, with the majority being considerable or moderate DM users (n=16-19, 47.1%-59.4%) and several being limited and non-DM users (40.6%-52.9%). However, it was only considerable and moderate DM users who engaged in all three activities (Activities 1, 3 and 10).

5.4.3.7 DM users' engagement with spoken input during ISLL

Besides looking into the "what", i.e. the informal activities which were found to impact DM use, interesting findings were revealed after examining the "how", i.e. the way different types of DM users reported engaging with L2 input during their ISLL. Qualitative analysis revealed an additional factor that seemed to differentiate considerable/moderate DM users from limited/non-DM users in their ISLL, and specifically in activities in which

they engaged only for leisure. From their descriptions of their ISLL only for leisure throughout the four time-points, it was found that all considerable and some moderate DM users engaged in behaviour that comprised a combination of two aspects: (a) noticing the characteristics of language encountered in speech in informal sources and (b) using the language encountered in informal sources in a productive way, by incorporating it into their own spoken productions.

Noticing linguistic details, such as accent and lexical items (both one-word items and multi-word expressions), was mentioned by participants from all DM user sub-groups when describing the following activities: listening to music and/or reading song lyrics (56.9%), watching videos/TV/film (43.1%), playing games (29.4%) and interacting (by speaking) with L2 peers (9.8%). Fewer reported noticing aspects of L2 vocabulary when engaging in activities such as reading books (3.9%) or chatting by writing (1.9%). Participants were more likely to report noticing linguistic details from input that was aural or both visual and aural, rather than primarily visual.

Participants who described instances of paying attention to language during ISLL came from all DM user categories. However, a difference was detected in the responses between considerable/moderate and limited/non-DM users. On the one hand, limited DM users mainly claimed to notice specific, isolated words or expressions encountered in songs, games, videos and TV/film and gave examples of such lexical items (e.g. "*flexing*", "*heads up*"). On the other hand, besides noticing individual lexical items, considerable and moderate DM users also made comments about noticing how language was spoken in informal sources. Without being specific, some considerable and moderate DM users referred to paying attention to the overall spoken production; that is, the way speakers expressed themselves more generally – what appears to be a focus on the bigger picture (e.g. S11: "*I see how English people speak and how they say different things and I see everything in 'context' and I understand it better*", Time 3; S43: "*I like to listen to the way the actors express themselves and how they use the language*", Time 1; S1: "*Listening to actors talking and how they say different expressions... it sticks to you more*", Time 4).

The other difference between considerable/moderate DM users and limited/non-DM users was that all considerable and some moderate DM users mentioned actively using in a productive way the language encountered in speech in informal sources. As shown in the following quotes, this took the form of repeating lines from a favourite film, imitating accents, or using words/expressions encountered during informal activities. In any case,

such language was reported as being subsequently incorporated into students' own spoken productions.

> S14: "*I take lines from my favourite movies and repeat them and mimic the voice of the actor* [...] *I often speak to my friends like that*" (considerable user, Time 2)

> S15: "*We speak making references to movies that we like and sometimes we throw into the conversation expressions or lines that we like*" (considerable user, Time 1)

> S37: "*I hear words in the videos or movies and then I look them up and I get interested in them and use them afterwards*" (moderate user, Time 4)

> S45: "*I really admire Margot Robbie because I think that using English, she can support her speech depending on the situation. And I've heard many words that I didn't know before, and tried to learn them, and I've been using them, so it also had a positive impact on my own knowledge*" (considerable user, Time 1)

Paying attention to various aspects of language encountered in spoken discourse in informal sources coupled with using that language in a productive way was a characteristic behaviour of all considerable and some moderate DM users. As already revealed from the quantitative findings, it was this type of DM user who also engaged in frequent, out-of-class L2 speaking for leisure. Therefore, it could be suggested that such behaviour towards spoken language in informal sources combined with personalised, productive use of language on a frequent basis could have played a role in their DM use.

Such instances of using language in novel situations were not mentioned by limited and non-DM users, although a similar reported behaviour was singing along to songs. Other than that, limited and non-DM users did not report using language encountered in spoken discourse in videos, film/TV or spoken interactions. Instead, the most commonly stated actions following the noticing of a particular item comprised looking up its meaning or recognising it in subsequent input, usually inside the classroom. In other words, there was no mention from limited or non-DM users that their engagement with language in informal sources went past initial comprehension and recognition to subsequent production or incorporation in novel spoken constructions (e.g. S16: "*I saw the word 'intentions' in the song and I didn't know what it meant and I looked it up and that week we came across that*

same word in class and I knew it and I said 'Miss, I know the meaning'", non-DM user, Time 1).

To summarise, intentional practices that prompted L2 production, rather than simply reception, and which accompanied activities only for leisure, appeared to distinguish considerable/moderate DM users from limited/non-DM users.

5.4.3.8 Learner attributions for DM learning/use

This section presents the results of qualitative analysis of data gathered from students' responses to the interview question: "When you speak in English, I noticed that you use <DM>. How do you think you have learned how to use these words when you are speaking?". The question was asked at the final time-point, as it explicitly enquired about DMs[41]. Results are displayed in Figure 5.11. The majority of students (58.3%), and in particular moderate (14.6%) and limited (35.4%) DM users regarded formal contexts (i.e. teachers, speaking lessons and exercise instructions in textbooks) as the main source of learning and/or using DMs. Fewer students (27.1%), from all DM user sub-groups, attributed their learning of DMs to their ISLL. A minority (8.3%) regarded both contexts as the source for their DM learning/use, while other factors, such as the fact that DMs are also present in L1 Greek, were mentioned by three participants of different DM user profiles.

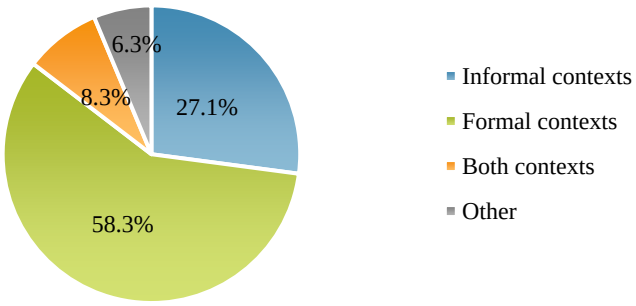


Figure 5.11 Attributions for DM learning/use.

A possible reason why a large percentage of students, the majority of whom were limited DM users, referred to formal contexts for learning and/or employing DMs could be due to

[41] The three participants who were non-DM users both at Time 4 and overall were not asked that question because they had not used any of the examined DMs in their spoken discourse. The total number of participants who were asked this question was n=48 (excluding the extreme outlier).

most of those students' focus on *so* and *well*, two of the most frequent DMs in teachers' discourse and instructional material. Although two of the four teachers had broad DM range and high DM frequency in the recorded lessons (as seen in Section 5.2.1), none of their student-participants mentioned having noticed DMs in teachers' speech. Instead, those who attributed their DM learning to the formal context, claimed being explicitly instructed to use DMs for instrumental reasons, such as better performance at the exams. A pattern observed in these students' responses, and in particular in the responses of limited DM users, was that teachers' encouragement for DM use was sometimes perceived as an obligation (e.g. S2: "*We have to use such expressions to earn points*", limited user, Time 4; S8: "*In the speaking class with Mrs <name of teacher>, she says that in the exams, we will have a discussion with the examiners and that we have to be spontaneous, to say 'well', so I think I learned it from her*", limited user, Time 4).

One student in particular, moderate user S37, stated that she made conscious effort to use different registers in formal and informal settings by avoiding the use of DMs and, in particular, the excessive employment of *like*, which she implied as being "*slang*". That was the only recorded case of someone who referred to intentionally resisting the use of a specific DM due to external demands in the formal context (S37: *"When I'm in a formal situation I consciously try not to use them. I was told to be very careful and avoid using 'like' too much or other slang that is not appropriate for the exams",* moderate user, Time 4).

Students from various DM user sub-groups who attributed their learning of DMs to their ISLL mentioned noticing these words in TV/film discourse, YouTube videos or in their interactions with L2 others. Noticing DMs in spoken discourse was only mentioned by students who attributed their DM learning/use to their ISLL.

> S35: "*You encounter these words mainly on YouTube and the Internet because the teacher doesn't say these words at school, she doesn't say 'I mean', 'you know what I mean' and so on. The only time she's going to say these words is to tell us not to use them"* (moderate DM user, Time 4).
>
> S37: "*From the girls I talk to who are American [...] I heard them saying 'like' and I remember how I first talked to them and how I speak now, so it's definitely because of them*" (moderate DM user, Time 4).

The statements of considerable and moderate DM users in particular (which will be further examined below) more specifically suggested that learning/use of DMs had not been the result of deliberate learning through informal sources but was rather due to frequent exposure to such input. Those DM users had employed markers, such as *like*, the general extender *and stuff*, and *so* followed by *yeah* (i.e. *so yeah*), which were found to be absent from teacher talk and scarcely represented in textbooks, but likely to be encountered in informal settings.

Two patterns observed in the responses of five considerable and five moderate users were (a) an awareness of the functions of DMs in spoken discourse and (b) the perception of DM learning as incidental. More specifically, those considerable and moderate users reported an awareness of the general function of DMs, as evident from their comments, which contained words and phrases such as "*cohesion*", "*they help the speech flow*", "*they help us move on"*. However, it was not clear whether awareness of the general function of DMs was instilled by their teachers or had been self-discovered. Furthermore, it was considerable and moderate users who appeared to suggest that they had picked up DMs and acquired them incidentally as a result of receptive exposure to speech in informal sources, mainly TV/film and videos, rather than having learned them deliberately. Phrases such as "*you hear these words and they stick to you*" and "*they talk like that and now it's stuck in my head*", were found in these users' responses. The following statements of S11 and S15 illustrate this further. These postulations about DM learning/use being incidental go counter to what other participants, mainly limited DM users, implied, namely that learning/use of DMs was intentional due to external demands in formal contexts, such as exam requirements and teachers' instructions.

> S11: "*If you listen to how English people talk and the words they use, at some point while you're speaking, you wind up using them too, so it's out of habit*" (considerable user, Time 4)

> S15: "*I'm watching all these movies and mainly without subtitles [...] and because I have this habit of remembering the actors' lines, I think that these words have in some way permeated my speech*" (moderate user, Time 4)

5.4.3.9 Summary

To summarise, the main finding of statistical analysis regarding the effect of ISLL on DM use was that type of ISLL activities (rather than number of ISLL activities) was related to wider DM range and higher overall DM frequency. More specifically, of all 23 activities examined, the following activities stood out, engagement in which only for leisure on a frequent basis positively impacted most aspects of DM use: (a) speaking to oneself/ interacting (by speaking) with L1/L2 others and (b) watching TV/films without subtitles. Most considerable and some moderate DM users, unlike limited and non-DM users, were found to engage in all these key activities consistently over time. As opposed to the factors of spoken proficiency and formal instruction, neither of which had statistically significant effects on most aspects of DM use, the significant results presented in this section constitute a strong case for the impact of ISLL on some aspects of DM use.

The findings of further qualitative exploration of DM user sub-groups point to the role of learner behaviour during ISLL which could be associated with differences in DM use. The findings underline the importance of *active* engagement with spoken input in informal sources; the combination of noticing aspects of spoken input and subsequently embedding them in one's own spoken productions suggest deliberate action related to L2 speaking, which was only reported by considerable/moderate DM users when describing their ISLL. Engaging in such behaviour, or at least being aware of doing so, was not evident in the responses of limited/non-DM users. Besides reporting intentional practices, considerable/moderate DM users regarded their DM learning/use a result of incidental acquisition (owing to frequent exposure) rather than deliberate learning. In other words, despite active engagement with spoken input in general, there appeared to be no intention to learn DMs, in particular, in the first place, and considerable/moderate DM users believed that DMs had been picked up during ISLL. This also goes contrary to students (mainly limited DM users) who attributed their DM use to deliberate learning inside formal contexts. The blurred boundaries between intentional practices and incidental acquisition during ISLL as well as their role in DM use will be discussed in Chapter 6.

5.4.4. Motivation

The fourth factor examined in relation to learners' DM use was motivation, as conceptualised in the L2MSS and SDT theoretical frameworks. This sub-section firstly describes the different types of motivation expressed by the students over time, followed by the results of GLMMs in order to identify motivation types that positively or negatively impacted DM use. To aid the interpretation of statistical results, descriptive findings are also presented, based on the categorisation of students as different types of DM users. The findings of qualitative analysis are then outlined in order to shed light onto motivations related to L2 speaking, in particular, and the ways different DM-user types perceived speaking in different contexts (i.e. formal, informal).

5.4.4.1 Learners' stated motivations

Figure 5.12 shows the percentages of participants who expressed different types of motivation at least once in the present study when describing their Current L2 Self. Intrinsic stimulation was the most frequently reported: students (27.4-58.8%)[42] reported engaging in L2 learning because of a general enjoyment of the language itself and/or the L2 learning experience (e.g. S12: "*I really like this language and that's why I have a good relationship with it and that's why I use it so often*", Time 4). Students (23.9-54.9%) also reported engaging with the language because of the satisfaction they felt when accomplishing different tasks (intrinsic-accomplishment). Intrinsic-accomplishment was mainly associated with informal contexts, such as the satisfaction of being able to understand English when listening to songs or watching TV series (e.g. S2: "*I like that I'm able to understand without having to listen to Greek or read in Greek. I like that I can understand what the other person is saying*", Time 3)

Some students (15.7-43.1%) reported learning English because it enabled them to engage in personally valued activities (extrinsic identified motivation). Extrinsic identified motivation was mainly associated with informal settings (e.g. watching movies, playing digital games) rather than formal instruction (e.g. S48: "*I just like it as a language and it helps me knowing it, not necessarily for the future but so that I can understand what the other person says, for example, when I'm watching videos that interest me",* Time 1).

[42] The range signifies the range of the percentage of participants who expressed a certain motivation type across the four time-points.

Extrinsic external motives to learn because of external demands, such as parental pressure and globalisation, was the fourth most common motivation that described a Current L2 Self (23.9-39.2%, e.g. S40: "*I have to learn it because it's everywhere around us*", Time 1). Extrinsic external motivation was more associated with learning in formal rather than informal contexts (e.g. S23: "*Here I get to practise the language and become better because I need to get good grades*", Time 2).

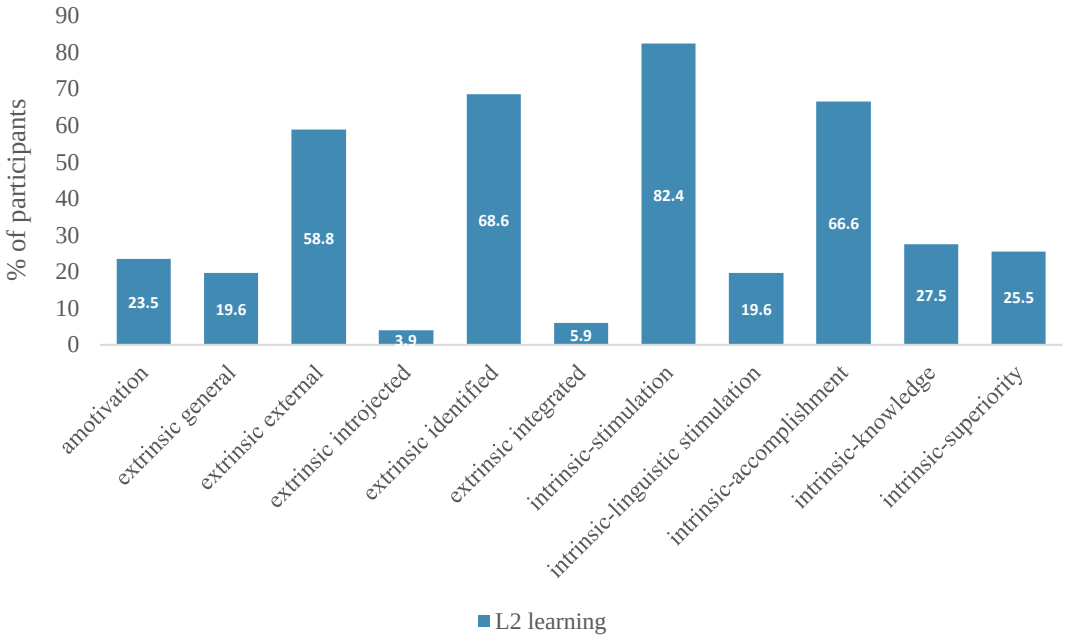


Figure 5.12 Stated motivations related to a Current L2 Self.

GLMMs were constructed for each type of motivation for learning at present as the dependent variable and time as a fixed effect in order to examine change over time. The results revealed that for most motivation types that described a Current L2 Self, there was no significant effect of time (most p's>.370), indicating that there was no statistically significant increase or decrease over time in the number of students who expressed a certain type of motivation. However, there was a significant effect of time on two types of motivation. More specifically, there was a statistically significant increase over time in the number of students who expressed intrinsic stimulation, i.e. engaging with English because of an arousing interest in the language itself and the learning experience (β=.38, SE=.12, p=.002), whereas there was a statistically significant decrease in the number of students who voiced extrinsic external motives for learning at present; that is, engaging in L2

learning because of external demands (β= –.90, SE=.19, p<.001). Figure 5.13 depicts the percentages of students who expressed each of the two types of motivation at each time-point.

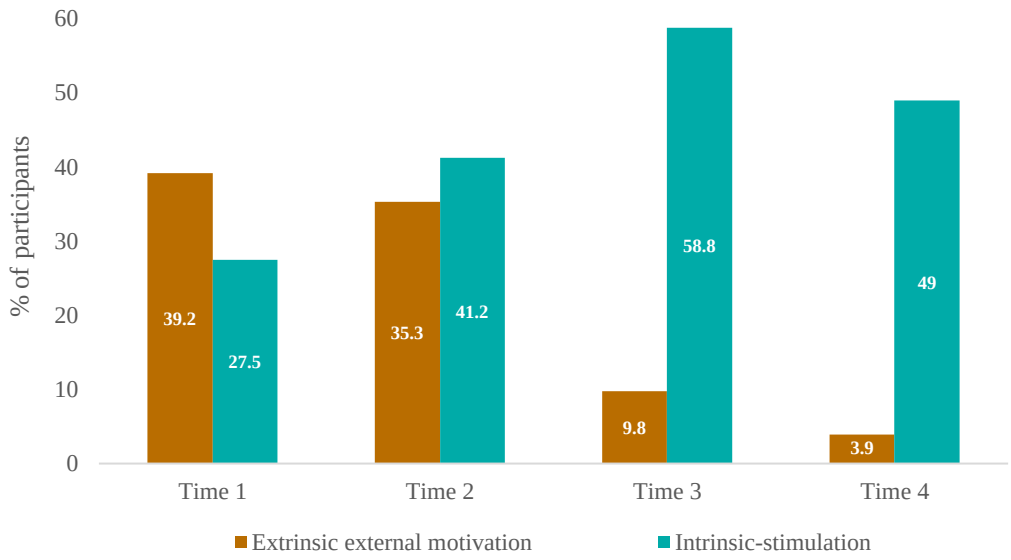


Figure 5.13 Change over time in intrinsic motivation (stimulation) and extrinsic external motivation.

Figure 5.14 shows the percentages of participants who expressed different types of motivation that described a Future L2 Self at least once in the present study. Students envisioned both an Ought-to L2 Self (11.8-62.7%, extrinsic external motivation) and an Ideal-L2 Self (21.6-47.1%, extrinsic identified motivation). When students envisioned an Ought-to L2 Self, they reported feeling that they had to learn English in order to become a person that they felt they were expected to become, either because of parental pressure, globalisation or other external demands, such as by securing a job (e.g. S45: "*I have to secure my future and English is necessary in order to find a job*", Time 2). When students envisioned an Ideal L2 Self, they reported wanting to learn English in order to become a person they personally aspired to become (e.g. S51: "*I want to be someone who doesn't think in Greek. I want at the same time my thoughts and speaking to be in English*", Time 1).

It was not uncommon for students to express envisioning an Ideal L2 Self and a complementary Ought-to L2 Self. For example, S27 expressed her desire to do a master's in an English-speaking country, a goal that appeared personally meaningful to the student,

but at the same time she acknowledged the necessity of being competent in English indefinitely.

> S27: "*I'd like to study medicine. And I'm thinking of first studying in Greece and then it's my dream to do a master's abroad and I would really like to go to England, to Oxford, it's my goal, I have high hopes... And for sure I will need English for that and it's a language that is going to be very necessary, it will be necessary even for ever. And it's knowledge. Why not have it*?" (Time 1)

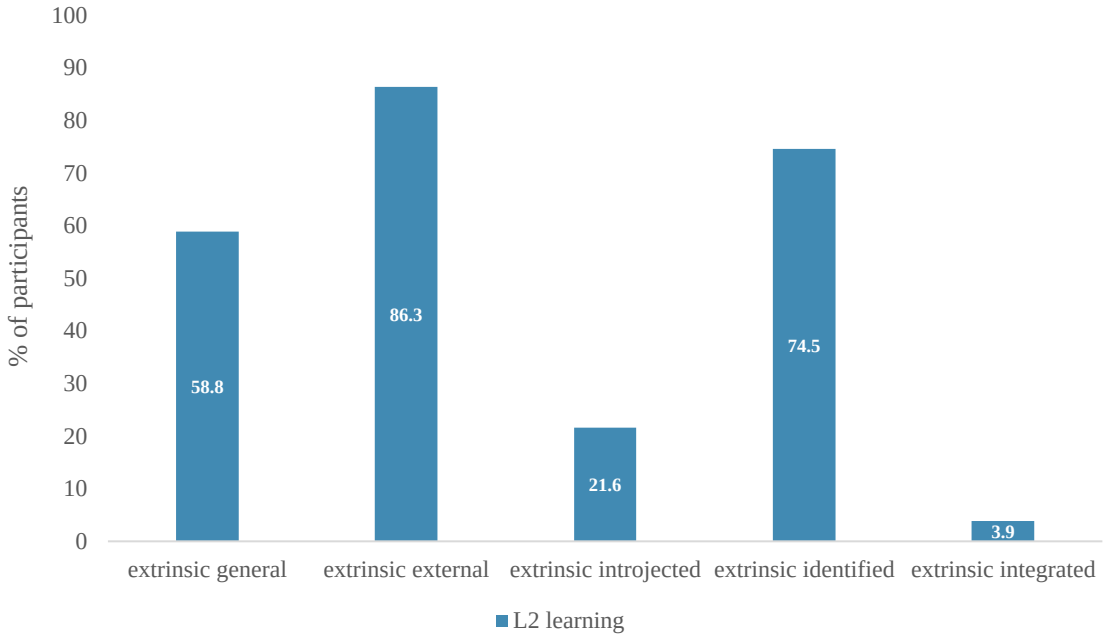


Figure 5.14 Stated motivations related to a Future L2 Self.

GLMMs were constructed for each type of motivation that described a Future L2 Self as the dependent variable and time as a fixed effect in order to examine if there was any change in perceived future self-states over time. The results showed that for all motivation types that described a Future L2 Self, there was no significant effect of time (all p's>.725), indicating that there was no statistically significant increase or decrease over time in the number of students who envisioned an Ought-to L2 Self or an Ideal L2 Self.

With regard to students' self-discrepancy, i.e. the discrepancy between the way they viewed themselves as language learners at present (Current L2 Self) and in the future (Future L2 Self), the statements of the majority of participants (66.7-74.5%) indicated that

there was little self-discrepancy; that is, there was a match between how they viewed themselves at present and how they envisioned themselves in the future in terms of L2 learning and L2 speaking. Only for a small number of students (5.9-13.7%) was there a mismatch between the two self-states. Those were mainly students who felt amotivated at present but envisioned themselves as competent users of the language mainly because of parental pressure and societal demands. For a few students (13.7-27.5%), their statements indicated neither match nor mismatch between current and future self-state. With regard to change in self-discrepancy over time, the results of a random-intercept GLMM with type of self-discrepancy as the dependent variable and time as a fixed effect, revealed no significant effect of time on self-discrepancy, meaning that there was no significant increase, decrease nor fluctuation over time in the percentage of students with little self-discrepancy, much self-discrepancy, or no relevance of self-discrepancy (p=.521).

5.4.4.2 Stated motivations and DM use

Random-intercept GLMMs were constructed with each aspect of DM use as the dependent variable and motivation types as fixed effects in order to examine the impact of motivation on DM use when time (repeated measures) and individual variation were taken into account. For each aspect of DM use, two sets of random-intercept GLMMs were constructed in order to examine two different sets of fixed effects; that is, motivations describing (a) a Current L2 Self and (b) a Future L2 Self.

Significant results were revealed only with respect to motivations describing a Current L2 Self and two aspects of DM use: DM range and interpersonal DM frequency. Tables 5.18 and 5.19 summarise the results of two random-intercept GLMMs with DM range and interpersonal DM frequency as the dependent variables, respectively, and with current motivations as fixed effects. The results showed that there were significant effects of extrinsic internal integrated motivation ($F(1,119)=9.29$, p=.003), and intrinsic-stimulation ($F(1,134)=5.05$, p=.026) on DM range. More specifically, students who expressed extrinsic internal integrated motivations when describing their Current L2 Self, i.e. engaging with English because they considered it an expression of their sense of self, had wider DM range than students who did not express such motivation (β=.54, SE=.18, p=.003). Similarly, students who expressed intrinsic-stimulation when describing their Current L2 Self, i.e. those who engaged with English because of an arousing interest in the language

and/or the learning experience, had wider DM range than students who did not express such motivation (β=.20, SE=.09, p=.026).

The results also showed that there were significant effects of intrinsic-linguistic stimulation ($F(1,63)=4.50$, p=.038) and extrinsic general motivation ($F(1,76)=12.47$, p=.001) on interpersonal DM frequency. More specifically, students who expressed intrinsic-linguistic stimulation as their current motivation, i.e. engaged with English because of an arousing interest in specific characteristics of the language (e.g. accent, lexical expressions), had higher interpersonal DM frequency than students who did not express such motivation (β=.52, SE=.24, p=.038). On the contrary, students who expressed extrinsic general motivation, i.e. engaged with English in order to achieve a separable outcome without specifying whether such motivation was more or less internalised, had lower interpersonal DM frequency than students who did not express such motivation (β= –.95, SE=.27, p=.001).

None of the remaining motivation types had a statistically significant effect on DM range (all p's>.202) or interpersonal DM frequency (all p's>.092) and none of the motivation types that described a Current L2 Self had a statistically significant effect on the other aspects of DM use (i.e. overall DM frequency, textual DM frequency and textual-interpersonal DM frequency, all p's>.359).

Table 5.18 Random-intercept GLMM for DM range with present motivations as fixed effects.

Parameters		β	SE	Test	p	95% CI
Fixed effects	Intercept	.62	.13	t = 4.84	<.001	[.37, .88]
	Amotivation	–.07	.16	t = –.44	.659	[–.38, .24]
	Extr. General	.04	.19	t = .20	.844	[–.34, .41]
	Extr. External	.08	.10	t = .77	.442	[–.12, .27]
	Extr. Introjected	–10.95	93.35	t = –.12	.907	[–197.37, 175.48]
	Extr. Identified	.00	.08	t = .05	.960	[–.16, .17]
	Extr. Integrated	**.54**	**.18**	**t = 3.05**	**.003**	**[.19, .89]**
	Intr. Stimulation	**.20**	**.09**	**t = 2.25**	**.026**	**[.02, .37]**
	Intr. Linguistic	.02	.14	t = .14	.887	[–.25, .29]
	Intr. Accomplishment	–.02	.10	t = –.19	.852	[–.21, .18]
	Intr. Knowledge	–.13	.13	t = –1.00	.321	[–.39, .13]
	Intr. Superiority	–.30	.24	t = –1.29	.202	[–.78, .17]
Random effects	Residual					
	Time 1	.73	.17	Z = 4.25	<.001	[.46, 1.15]
	Time 2	.43	.12	Z = 3.64	<.001	[.25, .73]
	Time 3	.54	.14	Z = 3.93	<.001	[.33, .88]
	Time 4	.24	.08	Z = 2.97	.003	[.13, .47]
	Intercept (participant)	.45	.12	Z = 3.65	<.001	[.27, .78]
AICC		434.56				

Note. β=estimate; SE=standard error; CI=confidence interval; AICC=Akaike Information Criterion Corrected; Extr.=Extrinsic; Intr.=Intrinsic; Linguistic=Linguistic Stimulation; "Non-presence of motivation type" was the reference category; Significant fixed effects are in bold.

Table 5.19 Random-intercept GLMM for interpersonal DM frequency with present motivations as fixed effects.

Parameters		β	SE	Test	p	95% CI
Fixed effects	Intercept	1.26	.18	t = 7.00	<.001	[.90, 1.61]
	Amotivation	–.05	.23	t = –.22	.827	[–.50, .40]
	Extr. General	**–.95**	**.27**	**t = –3.53**	**.001**	**[–1.49, –.42]**
	Extr. External	–.12	.17	t = –.69	.491	[–.47, .23]
	Extr. Introjected	–.96	.56	t = –1.70	.092	[–2.08, .16]
	Extr. Identified	.19	.15	t = 1.23	.220	[–.11, .48]
	Extr. Integrated	.64	.44	t = 1.45	.149	[–.23, 1.50]
	Intr. Stimulation	–.06	.15	t = –.41	.682	[–.35, .23]
	Intr. Linguistic	**.52**	**.24**	**t = 2.12**	**.038**	**[.03, 1.00]**
	Intr. Accomplishment	–.11	.15	t = –.74	.459	[–.41, .19]
	Intr. Knowledge	–.13	.20	t = –.64	.523	[–.54, .28]
	Intr. Superiority	.38	.39	t = .98	.334	[–.41, 1.17]
Random effects	Residual					
	Time 1	2.73	.58	Z = 4.73	<.001	[1.81, 4.14]
	Time 2	.41	.12	Z = 3.38	.001	[.23, .73]
	Time 3	.41	.12	Z = 3.39	.001	[.23, .73]
	Time 4	.69	.17	Z = 4.02	<.001	[.42, 1.12]
	Intercept (participant)	.31	.11	Z = 2.96	.003	[.16, .60]
AICC		590.75				

Note. β=estimate; SE=standard error; CI=confidence interval; AICC=Akaike Information Criterion Corrected; Extr.=Extrinsic; Intr.=Intrinsic; Linguistic=Linguistic Stimulation; "Non-presence of motivation type" was the reference category; Significant fixed effects are in bold.

With regard to a Future L2 Self, the results revealed that there was no statistically significant effect of a perceived future self-state on any aspect of DM use (all p's>.053). However, differences between DM users who envisioned different future self-states were identified in qualitative analysis presented in Section 5.4.4.3.

In terms of the four motivation types which emerged as significant in statistical analysis (i.e. intrinsic-stimulation, intrinsic-linguistic stimulation, extrinsic integrated motivation and extrinsic general motivation), the results of the mixed-effects modelling were in line with descriptive findings when exploring the stated motivations of students based on their categorisation of DM users at each time-point. At most time-points, half or more than half of considerable DM users (50.0-71.4%) and moderate DM users (53.3-64.3%) expressed intrinsic-stimulation, i.e. a general enjoyment of the learning experience, supporting the results of statistical analysis seen above. At the first two time-points, only a minority of limited DM users (16.7% & 31.8% of limited DM users) and non-DM users (14.3% & 22.2% of non-DM users) expressed such motivation, although the percentage grew over time, which is in line with the statistical finding that there was increase over time in the percentage of students who expressed intrinsic-stimulation.

A certain type of intrinsic motivation that was expressed by four considerable DM users and four moderate DM users but only by one limited and one non-DM user throughout the study was intrinsic-linguistic stimulation. The fact that this type of motivation was mainly expressed by students who were considerable or moderate DM users also supports the results of statistical analysis. Those students expressed an admiration for certain aspects of the language, such as the way it sounds or its expressions, as the following quotes from S14 and S15 indicate. In particular, students voiced this type of motivation when they explained their reasons for engaging with English informally. This further supports the finding in Section 5.4.3.7, which suggested that contrary to limited and non-DM users, students who were considerable and moderate DM users were more likely to make comments about noticing how language was spoken in informal sources and subsequently embedded different L2 aspects (e.g. accents, expressions) in their own spoken productions.

> S14: "*I really like the language and listening to it. I think it's a simple language that has the absolutely necessary things in it and I also like the way it sounds. I think it's one of the most beautifully sounding languages in the world, especially the British, the American is a bit 'slum'"* (moderate user, Time 3)

> S15: "*Right now it's much easier to write in English and this is what gives me more joy and enthusiasm, besides the fact that I really like certain things that in Greek don't sound as beautiful or don't seem as poetic, as literary. In English they seem so beautiful*" (considerable user, Time 3)

The only three students in the sample who voiced extrinsic integrated motivations were considerable DM users, a finding that also reflects the results of statistical analysis. Those students who expressed extrinsic integrated motives engaged with English at present because they considered it an integral part of themselves. For example, S10 and S45 felt that they were able to express themselves (i.e. thoughts, emotions) through English, as suggested in the quotes below:

> S10: "*Many times, I feel that I express myself better in English than in Greek. I don't know why... When I'm thinking about something, when I have an emotion, either positive or negative, I'm thinking inside only in English for some reason*" (considerable DM user, Time 1)

S45: "*I'm doing so many things in English that I like, I speak in front of the mirror in English, I write my own thoughts in English and generally everything I do, I do it in English. It's a way to express myself"* (considerable user, Time 3).

Of the ten students in the sample (19.6% of participants) who expressed extrinsic general motivation, i.e. extrinsic motivation that was not specified as being more or less internalised, almost all (n=8) were limited DM users, which reflects the results of statistical analysis. An indication of the lack of specifying whether motivation was more or less internalised could be that when those students were asked about reasons for learning English at present, their statements were not formulated in the first person singular (*I*), but students used the generic pronoun *you* in Greek, as shown in the quotes of S19 and S20 below. No considerable DM user voiced extrinsic motivation with regard to their Current L2 Self without specifying whether it was externally or internally regulated.

S19: "*I believe it's very difficult not having anybody to guide you. To write tests and get grades, to learn from your mistakes, to get better, to learn the expressions correctly, to learn the vocabulary correctly because there are websites with mistakes*" (limited user, Time 2)

S20: "*It helps you for example, if you go to a country, you are able to communicate with people there, so it's easier, it's not difficult to communicate*" (limited user, Time 1)

A possible reason why GLMMs did not produce significant results regarding the impact of a Future L2 Self on DM use could be because students who envisioned an Ought-to L2 Self or an Ideal L2 Self belonged to all DM user sub-groups, as indicated by descriptive findings. However, certain differences were revealed between considerable and moderate DM users on the one hand, and limited and non-DM users, on the other, when their statements regarding their future self-states were analysed qualitatively with a focus on their mentioning of the speaking skill. This and further differences between the DM user sub-groups with regard to their motivations about L2 speaking are detailed below.

5.4.4.3 DM users' Current and Future L2 Selves regarding L2 speaking

The results of qualitative analysis revealed further differences between the DM user sub-groups in terms of motivations, particularly related to L2 speaking. In general, the skill of speaking was mentioned to a greater extent by considerable and moderate DM users than by limited and non-DM users when they expressed internalised motivations regarding their Current L2 Self. More specifically, several students who were either considerable or moderate DM users throughout the study referred to L2 speaking at least at one of the four time-points when voicing intrinsic motives or extrinsic internal motivation (36.5% of participants).

For example, those students stated engaging with English because of the inherent satisfaction of being able to speak a language other than Greek and communicate orally with others (i.e. intrinsic-accomplishment). This was less so the case with limited and non-DM users for whom similar motives were not often related to speaking but mainly linked to understanding the language they heard or read in different contexts, such as in movies or lessons at school (33.3% of participants). Quotes by S22 and S49 illustrate this difference.

> S22: "*I like that it's a foreign language and it's not usual, how can I say it... being able to speak, being able to speak a language other than Greek* [...] *I like feeling that I can speak with people freely*" (moderate user, Time 2)

> S49: "*There are many nice songs in English, and I like listening to them and since I've learned English, I can finally understand what they say and I like that*" (limited user, Time 3)

Furthermore, considerable and moderate DM users were the only students who voiced feelings of superiority for speaking the language better than L1 others and expressed an inherent satisfaction that came from not being understood by L1 others when they spoke (i.e. intrinsic-superiority), e.g. S11: "*Speaking in English is different than speaking in Greek because you feel that the others around you don't understand you that well, so it's more satisfying"* (considerable user, Time 3).

Students who were considerable and moderate DM users specifically mentioned certain aspects of the language they enjoyed using when speaking (i.e. intrinsic-linguistic stimulation), such as lexical items or accents, e.g. S12: "*Because all English people are*

very polite, we learn various kinds of such expressions and I like to use these expressions when I talk. They show that someone is civilised" (considerable DM user, Time 4). Attention to and enjoyment of such details when speaking was never voiced by limited or non-DM users.

It is also noteworthy that the three considerable DM users who expressed extrinsic integrated motivation, i.e. they engaged with English at present because they considered it an integral part of themselves, all referred to L2 speaking in their statements. Those students also reported speaking to themselves or interacting with L1/L2 others on a frequent basis only for leisure.

Conversely, limited and non-DM users were less likely to mention the skill of speaking when describing motivation for engaging with English at present. Of the few that did so (25.4% of participants), most referred to L2 speaking mainly when expressing external motivation at least at one of the four time-points. Such motives were, for example, the need to speak in English because of necessary exam preparation or even to participate in informal L2 activities, e.g. S28: "*I must know how to speak English if I want to play computer games because everyone speaks in English there and if I don't, I won't understand what to do or what to say*" (limited user, Time 2).

Moreover, only limited and non-DM users were negatively disposed towards speaking the language at present (amotivation), or expressed overall disinterest, stress, even fear (13.7% of participants), e.g. S31: "*English for me- generally foreign languages have always been a stress... I don't know if they are stressful because it's something different. Especially when you speak, you expose yourself and if the others don't know you, they might make fun of you for some reason*" (non-DM user, Time 3).

The results of statistical analysis outlined in Section 5.4.4.2 revealed that there was no statistically significant impact of any type of Future L2 Self on DM use. However, the results of qualitative analysis of the statements of students who belonged to different DM user sub-groups pointed to qualitative differences in the content of their statements. More specifically, although all types of DM users envisioned an Ideal L2 Self, those in the sub-groups of considerable and moderate DM users were more likely to particularly refer to L2 speaking; that is, they visualised themselves as fluent L2 speakers (37.3% of participants), e.g. S14: "*I want to be able to speak in English whenever I want casually and if I want*

formally, to be able to have a stable and direct communication with the language in both ways" (considerable user, Time 1).

Limited and non-DM users did not necessarily specify the skill of speaking when describing their Ideal L2 Self. On the contrary, they provided more general statements; for example, they imagined themselves following their dream career abroad, or emphasised other aspects of the language, such as L2 writing, e.g. S18: "*I'd like to be able to convince someone to buy something for example, to be able to write a very good essay and persuade them*" (limited user, Time 2).

Limited and non-DM users were more likely to explicitly point to L2 speaking when they described an Ought-to L2 Self. For example, students felt a sense of obligation to become fluent L2 speakers in order to meet the expectations of others, such as their teachers or future L2 others (extrinsic external motivation, e.g. S19: "*As my teachers have told me, English people won't ask to see my degrees, but they will ask me to speak the language*", non-DM user, Time 2). For others, being a fluent L2 speaker appeared to be a necessity in order to avoid feelings of shame (extrinsic introjected motivation, e.g. S44: *"I have to know how to speak well and with a good accent because it will be awkward when others are going to hear me and see that I don't have the best accent possible*", limited user, Time 3).

A final finding concerns qualitative differences in self-discrepancy between considerable and moderate users, on the one hand, and limited and non-DM users, on the other, in terms of L2 speaking. Because most considerable and several moderate DM users did not simply view L2 speaking as a distant goal but were also internally motivated to speak at present, there was little self-discrepancy between their current and future self-states in terms of L2 speaking. For example, S26's statements about her Current L2 Self (general enjoyment – intrinsic stimulation) and her visualisation of an Ideal L2 Self as a fluent L2 speaker were interpreted as indicating a match and therefore little self-discrepancy:

> R: *"What's your relationship with English at the moment?"*
> S26: "*I really like English as a language and I really like talking in English. This doesn't change. And I like speaking with an accent, I haven't put that much of an effort, it has come naturally*" (considerable DM user, Time 4)

R: "*What is your most important goal with regard to English?"*
S26: "*I want to speak well because I'm doing a sport and it is important for me to speak well because maybe I can go abroad and study at a university in England or America and play in a polo team there*" (considerable DM user, Time 4).

For the small number of limited and non-DM users who envisioned themselves as fluent L2 speakers (13.7-19.6% of participants), this did not appear to always match their Current L2 Self. Statements regarding a Current and Future L2 Self in terms of L2 speaking were interpreted as showing mismatches, and therefore much self-discrepancy; despite having aspirations to become fluent L2 speakers in the future, several reported being driven by external motives to speak at present or even expressed amotivation, as shown in the statements of S32:

R: *"What's your relationship with English at the moment?"*
S32: "*I don't really like speaking in English because I'm afraid that I make a lot of mistakes* [...] *I'd prefer it if I studied Italian*" (non-DM user, Time 4).

R: "*What is your most important goal with regard to English?"*
S32: "*I'd like to be able to speak and not think, to make my speaking smoother, to talk continuously and make it sound as if it was my mother tongue*" (non-DM user, Time 4).

As seen from the above qualitative findings, considerable and moderate DM users were more likely to refer to L2 speaking when they expressed internalised motivations to learn at present and had personally meaningful aspirations to become fluent L2 speakers, whereas limited and non-DM users were more likely to be driven by less internalised motives to speak at present and at future, with some even negatively disposed towards speaking in English currently.

5.4.4.4 DM users' perceptions about their L2 Speaking Experience

The present study further looked into whether types of DM users also differed regarding the way they perceived the L2 Speaking Experience (a breakdown from the L2 Learning/Speaking experience) in the two contexts under examination (i.e. formal, informal), in order to gain insight into the perceived characteristics of the different

contexts that might have shaped students' motivations in terms of L2 speaking. Contexts of L2 speaking which were regarded as formal were students' morning secondary school, evening language school and exam settings, whereas contexts outside the classroom were considered informal (e.g. speaking at home to oneself, having online or face-to-face interactions with family/friends, speaking during trips abroad).

Findings of qualitative analysis revealed that irrespective of the DM user sub-group they belonged to, students in the present study perceived differences between speaking in formal and informal contexts. When students were asked about the context they felt they spoke in English the most and the context they felt they enjoyed speaking the most, most participants (66.6%) felt that they spoke more inside formal settings but the majority (56.8%) stated a preference for speaking in informal contexts rather than inside the classroom (Figure 5.15). In their justification of their preferences, three major themes emerged, revealing a perceived difference between the two contexts with regard to L2 speaking: affective parameters, type of language used and content of discourse. It can be suggested that students perceived what is known as an "authenticity gap" between the two contexts (Henry, 2013; Lamb & Arisandy, 2020). Although the questions were asked explicitly once (Time 2), these themes were detected in students' data also in the subsequent time-points.

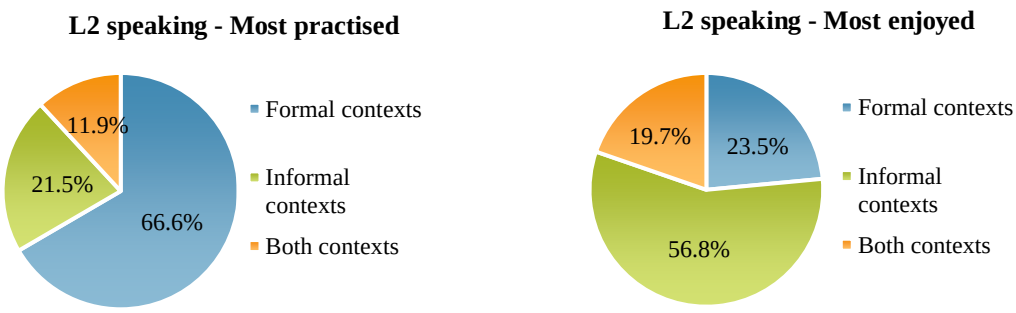


Figure 5.15 Contexts of L2 speaking: most practised and most enjoyed.

Firstly, the nature of informal settings appeared to lower inhibiting affective factors that were felt inside the classroom by all types of DM users. For example, speaking in informal settings was described as "*more comfortable*", "*less stressful*", "*more enjoyable*", whereas when speaking in formal contexts students reported feeling "*embarrassed*" and "*forced to talk*". Different reasons were voiced to justify their feelings towards speaking inside the classroom, such as limited time allocated to speaking turns during lessons, an anticipation

of time restrictions at the upcoming oral exams, face-threatening error correction in front of classmates, the unengaging content of speaking practice in formal contexts and the urgency of exam preparation.

Secondly, differences were acknowledged regarding the content of speaking in the two contexts. The controlled topics for discussion which were pre-selected by teachers and textbooks to meet the syllabus criteria for the oral exams were found to be less engaging to students who also spoke outside the class. The upcoming speaking examinations were perceived as not resembling natural conversation (e.g. S49: "*Nobody speaks to you in the exams, and it feels weird having others just listen to you"*, limited user, Time 2).

Thirdly, differences were detected regarding the language expected from students in discourse taking place in formal as opposed to informal settings, with language spoken in formal settings described as "*pretentious*", "*complex*", "*fancy*" and "*sophisticated*", whereas language spoken in informal settings described as "*normal*", "*simpler*" and "*everyday*". S21's quote below illustrates that.

> S21: "*I talk about things that interest me while here we talk about specific issues* [...] *in the speaking lesson here, you don't speak like a normal person, as a normal person*"
> R: "*How do you speak?*"
> S21: "*Because we talk a lot ... how can I say it? Not in a simple, but in a special, elegant way*"
> R: "*So, you don't like it that much?*"
> S21: "*No*"
> R: "*Why?*"
> S21: "*Because if you talk to a stranger outside, you don't talk to him like that, you just talk to him in a normal way*" (moderate user, Time 2).

Taking the aforementioned findings into consideration, it might not be surprising that when asked about one time they enjoyed speaking in English the most, almost all participants (94.1%), irrespective of the DM user sub-group they belonged to, referred to an L2 speaking incident that had taken place in an informal, rather than formal, setting (e.g. speaking to L2 tourists during holidays in Greece, interacting with L2 exchange students in Greece or school trips abroad). Affective factors, such as enjoyment, lack of stress over mistakes and satisfaction in carrying out real-life, personally meaningful tasks in English,

even in impromptu interactions, were reasons voiced for favouring such speaking experiences.

However, an important difference that was revealed between most considerable and several moderate DM users, on the one hand, and most limited and non-DM users, on the other, regarded their overall attitude towards engaging in L2 speaking in informal settings. At the final time-point students were asked "What is one thing you would do to practise speaking more?". Although limited and non-DM users (58.8%) reported that they would practise their speaking further by interacting with L1/L2 others while in Greece, the realisation of frequent, authentic and informal interactions with L1/L2 others was regarded as an unrealistic endeavour or beyond their control. Those students referred to perceived inadequate opportunities for speaking frequently, owing to factors pertinent to the nature of the Greek EFL context, such as lack of readily available L2 interlocutors and having no immediate need to interact primarily in English (e.g. S8: "*We are in Greece, so it's difficult to speak in English all the time*, limited user, Time 4). Other inhibiting factors voiced were lack of time and uncertainty as to how they would access L2 interlocutors online in order to initiate such interactions (e.g. S49: "*It's difficult to find friends from other countries* [...] *I don't know how I can find them*", limited user, Time 4).

Although those students reported feeling limited by the perceived constraints of the Greek EFL context in order to speak frequently, most considerable DM users and several moderate DM users (27.5%) seemed to have made up for such limitations through active use of technology, as seen in Section 5.4.3. The use of mobile apps with the embedded features of voice calls, video calls or voice-recordings enabled those considerable and moderate DM users to access and interact with L1/L2 peers on a frequent basis. Informal sources such as digital games or online fandoms were spaces where they had initiated contact with L2 speakers who lived abroad. Lack of readily available L2 interlocutors did not seem to impede those considerable and moderate DM users who spoke to themselves frequently with or without the use of technology (as seen in Section 5.4.3.6).

To conclude, the majority of the students in the sample, regardless of the DM user sub-group they belonged to, perceived an authenticity gap between speaking in formal and informal contexts. However, the effect of the perceived authenticity gap on students' L2 speaking and motivations appeared to be different depending on the type of DM user. On the one hand, considerable and moderate DM users appeared to have taken advantage of various opportunities to engage in frequent, informal L2 speaking, driven by personal

interests. This might explain their overall highly internalised motivations despite the perceived authenticity gap between speaking in formal and informal contexts. On the other hand, limited and non-DM users were more likely to point out perceived obstacles for engaging in L2 spoken interaction. This might partially explain why those students reported never speaking for leisure, or spoke only on occasion, which in turn might explain their less internalised motivations regarding L2 speaking. The perceived authenticity gap between speaking in formal and informal contexts might have contributed even further to their less internalised motivations regarding L2 speaking.

5.4.4.5 Summary

The main finding from statistical analysis regarding the effect of motivation on DM use was that it was motivation related to a Current L2 Self rather than a Future L2 Self that had a significant effect on two aspects of DM use, namely DM range and interpersonal DM frequency. This highlights the importance of the otherwise neglected component of Current L2 Self (as shown in the literature review), which will be further discussed in Chapter 6. Related to that finding was the qualitative observation that considerable/moderate DM users did not only imagine themselves as fluent L2 speakers in the future, as had been hypothesised, but also expressed highly internalised motivations for speaking at present, resulting in small self-discrepancy between current and future self-states with regard to L2 speaking.

The findings also pointed to the role of L2 Speaking Experience in DM use. A combination of internalised current motivations combined with personal interests (e.g. interacting with L1/L2 others outside the class) and a certain attitude, namely being aware of but actively making up for the limited authenticity of speaking in formal contexts (often with the help of technology) were characteristics of considerable and moderate DM users. It could be suggested that if more students were or felt more able to speak frequently for leisure in informal settings, which was what most considerable and some moderate users reported actually doing (as seen in Section 5.4.3.6) and what the remainder of participants reported ideally doing but felt it was out of their control to do, then that could increase motivation towards L2 speaking and possibly have an effect on spoken DM use.

5.4.5. Overview of quantitative results for RQ3

Section 5.4 looked into how each of the factors under examination (spoken proficiency, formal instruction, ISLL and motivation) impacted DM use when repeated measures (time) and individual variation were taken into account. The factors were explored in isolation to gain in-depth understanding of the different sub-variables and investigate their unique effect on each aspect of DM use. Table 5.20 summarises the results of statistical analysis for RQ3, indicating the factors with positive (+), negative (–) or no (x) statistically significant effect on DM use. As can be seen, ISLL was the only factor that significantly positively impacted all aspects of DM use. Nevertheless, the question remains as to which variable(s) contributed to each aspect of DM use with all factors taken together. It was hypothesised that results after combining all factors might slightly differ from results of the effect of each factor in itself, given the possible interrelationship between the variables. The results of analysis for all factors in combination are presented in the following section.

Table 5.20 Overview of effect of each factor on DM use (factors examined in isolation).

Factors	**DM use**				
	DM range	**Overall DM frequency**	**Textual DM frequency**	**Interpersonal DM frequency**	**Textual-interpersonal DM frequency**
Spoken proficiency	x	x	x	global scores (+)	x
Formal instruction	x	x	x	x	x
ISLL	speaking / interacting only for leisure (+)	watching TV without subtitles only for leisure (+)	watching TV without subtitles only for leisure (+)	overall engagement in all activities (+) & overall engagement in activities only for leisure (+)	speaking / interacting only for leisure (+) & watching TV without subtitles only for leisure (+)
Motivation	extrinsic integrated (+) & intrinsic-stimulation (+)	x	x	extrinsic general (–) & intrinsic-linguistic stimulation (+)	x

Note. **x**-no statistically significant effect; (+)-statistically significant positive effect; (–)- statistically significant negative effect.

5.5 RQ4: Important contributors to DM use

After exploring each factor individually, it was of interest to understand which of the factors taken together were the most important in contributing to DM use, controlling for the demographics of age and gender and accounting for individual variation and repeated measures (time). This section presents the results of generalized linear mixed-effects analyses that addressed RQ4: Which of the factors of spoken proficiency, formal instruction, ISLL and motivation, taken together and controlling for age and gender, contribute(s) to broad and frequent learner DM use over time?

Five random-intercept GLMMs were constructed for each of the five aspects of DM use and all the aforementioned factors as fixed effects. Based on previous analysis and informed by the results for RQ3, the following fixed effects were included to all models. With regard to spoken proficiency, the variable of global scores was added, similar to previous analysis. Aspects of formal instruction that were included were: school, class-level and previous years of formal instruction attended. In terms of ISLL and motivation, only those sub-variables that emerged as key effects for at least one aspect of DM use in previous analysis were added to all models, as justified in Section 4.7.1. More specifically, the following sub-variables of ISLL were included: overall engagement in all 23 informal L2 activities, overall engagement in all 15 informal L2 activities only for leisure, engagement in the activities of speaking to oneself/interacting (by speaking) with L1/L2 others only for leisure (activities 1 & 3 combined) and engagement in the activity of watching TV/films without subtitles only for leisure (activity 10). With respect to motivation, the following motivation types, which described a Current L2 Self, were included: extrinsic general motivation, extrinsic integrated motivation, intrinsic-stimulation and intrinsic-linguistic stimulation. Multicollinearity diagnostics revealed that there was no presence of multicollinearity among the selected variables. Interactions between fixed effects resulted in higher AICC values and therefore were not retained.

Tables 5.21 – 5.25 summarise the results of the five random-intercept GLMMs for each of the five aspects of DM use. Table 5.21 outlines the parameter estimates (β) for DM range. The results revealed that with all variables under examination taken together, three significant predictors of DM range were engaging in the activities of speaking to oneself/interacting with L1/L2 others only for leisure ($F(2,130)=5.39$, $p=.006$), expressing extrinsic integrated motivation for learning English ($F(1,107)=5.44$, $p=.022$) and expressing intrinsic stimulation for learning English ($F(1,123)=3.98$, $p=.048$). Post-hoc

tests (with sequential Bonferroni correction) were conducted to follow up the significant findings. The results showed that students who spoke to themselves or interacted (by speaking) with L1/L2 others only for leisure (activities 1 & 3) on a frequent basis had wider DM range than students who engaged in those activities on occasion (β=.62, SE=.23, p=.017) or never engaged in those activities (β=.76, SE=.23, p=.004). There was no significant difference in DM range between students who spoke/interacted only for leisure on occasion and students who never engaged in the activity (p=.327). Moreover, students who expressed extrinsic integrated motivation and intrinsic-stimulation for learning English at present had wider DM range than students who did not express such motivations (β=.42, SE=.18, p=.022 and β=.16, SE=.08, p=.048, respectively). None of the remaining factors had a significant effect on DM range (all p's>.078).

Table 5.21 Random-intercept GLMM for DM range with spoken proficiency, formal instruction, ISLL, motivation, age and gender as fixed effects.

Parameters			β	SE	Test	p	95% CI
Fixed	1	Intercept	4.54	1.95	t = 2.33	.027	[.55, 8.54]
effects	2	Global scores	–.06	.08	t = –.74	.459	[–.22, .10]
	3	School = School D	–.01	.28	t = –.04	.969	[–.59, .57]
		School = School C	–.24	.35	t = –.67	.508	[–.96, .49]
		School = School B	.19	.22	t = .84	.409	[–.28, .65]
		School = School A	.00				
	4	Class-level = lower	–.33	.25	t = –1.33	.196	[–.84, .18]
		Class-level = higher	.00				
	5	Years of formal instruction	.11	.11	t = 1.02	.319	[–.11, .33]
	6	Engagement_all activities	–.01	.04	t = –.22	.823	[–.08, .07]
	7	Engagement_all activities_leisure	.00	.04	t = .01	.993	[–.08, .08]
	8	**Speak/interact._leisure = freq.**	**.76**	**.23**	**t = 3.28**	**.001**	**[.30, 1.22]**
		Speak/interact._leisure = occ.	.14	.16	t = .89	.377	[–.17, .44]
		Speak/interact._leisure = never	.00				
	9	Watch.tv.no.subs_leisure = freq.	.19	.16	t = 1.15	.254	[–.14, .51]
		Watch.tv.no.subs_leisure = never	.00				
	10	Extr. general motivation = yes	.09	.19	t = .44	.662	[–.30, .47]
		Extr. general motivation = no	.00				
	11	**Extr. integrated motivation = yes**	**.42**	**.18**	**t = 2.33**	**.022**	**[.06, .78]**
		Extr. integrated motivation = no	.00				
	12	**Intr. stimulation = yes**	**.16**	**.09**	**t = 1.99**	**.048**	**[.00, .31]**
		Intr. stimulation = no	.00				
	13	Intr. linguistic stimulation = yes	–.04	.13	t = –.33	.744	[–.31, .22]
		Intr. linguistic stimulation = no	.00				
	14	Age	–.29	.16	t = –1.84	.078	[–.61, .04]
	15	Gender = male	–.10	.21	t = –.48	.636	[–.52, .32]
		Gender = female	.00				
Random		Residual					
effects		Time 1	.80	.19	Z = 4.24	<.001	[.51, 1.27]
		Time 2	.42	.12	Z = 3.63	<.001	[.25, .72]
		Time 3	.53	.14	Z = 3.84	<.001	[.32, .88]
		Time 4	.33	.11	Z = 3.01	.003	[.17, .61]
		Intercept (participant)	.33	.12	Z = 2.69	.007	[.16, .68]
AICC			423.98				

Note. β=estimate; SE=standard error; CI=confidence interval; AICC=Akaike Information Criterion Corrected; Extr.=Extrinsic; Intr.=Intrinsic; freq.=engaging in the activity frequently; occ.= engaging in the activity on occasion; yes=presence of motivation type; no=non-presence of motivation type; Reference categories: "School A" for school, "higher" for class-level, "never" for engagement in each activity, "no" for motivation type, "female" for gender; Significant predictors are in bold.

Table 5.22 shows the parameter estimates (β) for overall DM frequency. The results indicated that with all variables under examination taken together, two significant predictors of overall DM frequency were engagement in the activities of speaking to oneself/interacting with L1/L2 others only for leisure ($F(2,140)=4.09$, p=.019) and watching TV/films without subtitles only for leisure ($F(1,161)=6.71$, p=.010). Post-hoc tests (with sequential Bonferroni correction) were conducted to follow up the findings. The results showed that students who spoke to themselves or interacted (by speaking) with L1/L2 others only for leisure (activities 1 & 3) on a frequent basis had higher overall DM frequency than students who engaged in those activities on occasion (β=.76, SE=.28, p=.021) or never engaged in those activities (β=.76, SE=.28, p=.021). There was no significant difference in overall DM frequency between students who spoke/interacted only for leisure on occasion and students who never engaged in the activity (p=.980). Moreover, students who watched TV/films without subtitles only for leisure on a frequent basis had higher overall DM frequency than students who never engaged in the activity (β=.51, SE=.20, p=.010). There was also a marginally significant negative effect of age on overall DM frequency ($F(1,40)=4.10$, p=.050). More specifically, age was marginally, negatively related to overall DM frequency (β= –.38, SE=.19, p=.050), meaning that older adolescents employed fewer DM tokens than younger adolescents. None of the remaining factors had a significant effect on overall DM frequency (all p's>.109).

Table 5.22 Random-intercept GLMM for overall DM frequency with spoken proficiency, formal instruction, ISLL, motivation, age and gender as fixed effects.

Parameters			β	SE	Test	p	95% CI
Fixed	1	Intercept	6.58	2.35	t = 2.80	.007	[1.85, 11.32]
effects	2	Global scores	.04	.09	t = .41	.684	[–.14, .22]
	3	School = School D	–.03	.34	t = –.09	.929	[–.72, .66]
		School = School C	.04	.42	t = .09	.930	[–.80, .88]
		School = School B	.39	.28	t = 1.42	.164	[–.17, .95]
		School = School A	.00				
	4	Class-level = lower	–.49	.30	t = –1.63	.110	[–1.10, .12]
		Class-level = higher	.00				
	5	Years of formal instruction	.21	.13	t = 1.64	.109	[–.05, .47]
	6	Engagement_all activities	–.01	.04	t = –.34	.736	[–.10, .07]
	7	Engagement_all activities_leisure	–.04	.05	t = –.87	.383	[–.14, .06]
	8	**Speak/interact._leisure = freq.**	**.76**	**.28**	**t = 2.70**	**.008**	**[.20, 1.31]**
		Speak/interact._leisure = occ.	–.00	.17	t = –.03	.980	[–.34, .33]
		Speak/interact._leisure = never	.00				
	9	**Watch.tv.no.subs_leisure = freq.**	**.51**	**.20**	**t = 2.59**	**.010**	**[.12, .90]**
		Watch.tv.no.subs_leisure = never	.00				
	10	Extr. general motivation = yes	.14	.17	t = .79	.430	[–.21, .48]
		Extr. general motivation = no	.00				
	11	Extr. integrated motivation = yes	.21	.30	t = .68	.499	[–.39, .80]
		Extr. integrated motivation = no	.00				
	12	Intr. stimulation = yes	–.03	.09	t = –.37	.712	[–.21, .14]
		Intr. stimulation = no	.00				
	13	Intr. linguistic stimulation = yes	.07	.18	t = .39	.700	[–.28, .42]
		Intr. linguistic stimulation = no	.00				
	14	**Age**	**–.38**	**.19**	**t = –2.02**	**.050**	**[–.76, –.00]**
	15	Gender = male	.19	.25	t = .76	.453	[–.32, .70]
		Gender = female	.00				
Random		Residual					
effects		Time 1	.37	.09	Z = 4.10	<.001	[.23, .60]
		Time 2	.17	.06	Z = 3.11	.002	[.09, .32]
		Time 3	.23	.06	Z = 3.66	<.001	[.14, .40]
		Time 4	.27	.08	Z = 3.55	<.001	[.16, .48]
		Intercept (participant)	.53	.14	Z = 3.86	<.001	[.32, .87]
AICC			441.30				

Note. β=estimate; SE=standard error; CI=confidence interval; AICC=Akaike Information Criterion Corrected; Extr.=Extrinsic; Intr.=Intrinsic; freq.=engaging in the activity frequently; occ.= engaging in the activity on occasion; yes=presence of motivation type; no=non-presence of motivation type; Reference categories: "School A" for school, "higher" for class-level, "never" for engagement in each activity, "no" for motivation type, "female" for gender; Significant predictors are in bold.

Table 5.23 shows the parameter estimates (β) for textual DM frequency. The results indicated that with all variables under examination taken together, three significant predictors of textual DM frequency were: age ($F(1,38)=6.39$, p=.016), class-level ($F(1,43)=4.90$, p=.032), and engagement in the activities of speaking to oneself/interacting with L1/L2 others only for leisure ($F(2,136)=3.58$, p=.031). More specifically, age was negatively related to textual DM frequency (β= –.52, SE=.20, p=.016). Post-hoc tests (with sequential Bonferroni correction) were conducted to follow up the significant findings for the nominal/ordinal variables. The results showed that students at lower-level classes had lower textual DM frequency than students in higher-level classes (β= –.74, SE=.33, p=.032). Moreover, students who spoke to themselves or interacted (by speaking) with L1/L2 others only for leisure (activities 1 & 3) on a frequent basis had higher textual DM frequency than students who engaged in those activities on occasion (β=.88, SE=.33, p=.028) or never engaged in those activities (β=.79, SE=.34, p=.043). There was no significant difference in textual DM frequency between students who spoke/interacted only for leisure on occasion and students who never engaged in the activity (p=.670). None of the remaining factors had a significant effect on textual DM frequency (all p's>.055).

Table 5.23 Random-intercept GLMM for textual DM frequency with spoken proficiency, formal instruction, ISLL, motivation, age and gender as fixed effects.

Parameters			β	SE	Test	p	95% CI
Fixed effects	1	Intercept	8.74	2.60	t = 3.36	.002	[3.51, 13.96]
	2	Global scores	–.11	.11	t = –.94	.351	[–.33, .12]
	3	School = School D	–.03	.37	t = –.09	.931	[–.78, .72]
		School = School C	.18	.45	t = .40	.690	[–.73, 1.09]
		School = School B	.47	.30	t = 1.58	.123	[–.13, 1.07]
		School = School A	.00				
	4	**Class-level = lower**	**–.74**	**.33**	**t = –2.21**	**.032**	**[–1.40, –.07]**
		Class-level = higher	.00				
	5	Years of formal instruction	.27	.14	t = 1.98	.055	[–.01, .55]
	6	Engagement_all activities	.02	.05	t = .43	.671	[–.08, .13]
	7	Engagement_all activities_leisure	–.09	.06	t = –1.48	.142	[–.21, .03]
	8	**Speak/interact._leisure = freq.**	**.79**	**.34**	**t = 2.33**	**.022**	**[.12, 1.45]**
		Speak/interact._leisure = occ.	–.09	.22	t = –.43	.670	[–.52, .34]
		Speak/interact._leisure = never	.00				
	9	Watch.tv.no.subs_leisure = freq.	.45	.25	t = 1.82	.071	[–.04, .93]
		Watch.tv.no.subs_leisure = never	.00				
	10	Extr. general motivation = yes	.37	.22	t = 1.64	.105	[–.08, .81]
		Extr. general motivation = no	.00				
	11	Extr. integrated motivation = yes	.18	.39	t = .48	.635	[–.58, .95]
		Extr. integrated motivation = no	.00				
	12	Intr. stimulation = yes	.08	.11	t = .70	.487	[–.15, .30]
		Intr. stimulation = no	.00				
	13	Intr. linguistic stimulation = yes	.05	.22	t = .21	.833	[–.38, .48]
		Intr. linguistic stimulation = no	.00				
	14	**Age**	**–.52**	**.20**	**t = –2.53**	**.016**	**[–.93, –.10]**
	15	Gender = male	.26	.28	t = .95	.347	[–.29, .82]
		Gender = female	.00				
Random effects		Residual					
		Time 1	.96	.22	Z = 4.44	<.001	[.62, 1.50]
		Time 2	.25	.09	Z = 2.98	.003	[.13, .49]
		Time 3	.32	.09	Z = 3.45	.001	[.18, .56]
		Time 4	.49	.13	Z = 3.77	<.001	[.29, .83]
		Intercept (participant)	.58	.16	Z = 3.57	<.001	[.34, 1.01]
AICC			533.45				

Note. β=estimate; SE=standard error; CI=confidence interval; AICC=Akaike Information Criterion Corrected; Extr.=Extrinsic; Intr.=Intrinsic; freq.=engaging in the activity frequently; occ.= engaging in the activity on occasion; yes=presence of motivation type; no=non-presence of motivation type; Reference categories: "School A" for school, "higher" for class-level, "never" for engagement in each activity, "no" for motivation type, "female" for gender; Significant predictors are in bold.

Table 5.24 shows the parameter estimates (β) for interpersonal DM frequency. The results indicated that with all variables under examination taken together, three factors were significant predictors of interpersonal DM frequency: spoken proficiency ($F(1,116)=4.23$, p=.042), engagement in speaking to oneself/interacting with L1/L2 others only for leisure ($F(2,100)=8.12$, p=.001) and expressing extrinsic general motivation for learning English at present ($F(1,81)=12.45$, p=.001). More specifically, spoken proficiency was positively related to interpersonal DM frequency (β=.24, SE=.12, p=.042). Post-hoc tests (with sequential Bonferroni correction) were conducted to follow up the significant findings for the nominal/ordinal variables. The results showed that students who spoke to themselves or interacted (by speaking) with L1/L2 others only for leisure (activities 1 & 3) on a frequent basis had higher interpersonal DM frequency than students who engaged in those activities on occasion (β=.99, SE= 29, p=.002) or never engaged in those activities (β=1.16, SE=.30, p=.001). There was no significant difference in interpersonal DM frequency between students who spoke/interacted only for leisure on occasion and students who never engaged in the activity (p=.452). Students who expressed extrinsic general motivation for learning English at present had lower interpersonal DM frequency than students who did not express such motivation (β= –.92, SE=.26, p=.001). None of the remaining factors had a significant effect on interpersonal DM frequency (all p's>.122).

Table 5.24 Random-intercept GLMM for interpersonal DM frequency with spoken proficiency, formal instruction, ISLL, motivation, age and gender as fixed effects.

Parameters			β	SE	Test	p	95% CI
Fixed	1	Intercept	–.05	1.95	t = –.03	.978	[–3.97, 3.86]
effects	**2**	**Global scores**	**.24**	**.12**	**t = 2.06**	**.042**	**[.01, .47]**
	3	School = School D	–.21	.26	t = –.79	.432	[–.74, .32]
		School = School C	–.41	.32	t = –1.29	.206	[–1.06, .24]
		School = School B	.17	.21	t = .82	.415	[–.25, .60]
		School = School A	.00				
	4	Class-level = lower	–.03	.24	t = –.11	.911	[–.52, .46]
		Class-level = higher	.00				
	5	Years of formal instruction	–.09	.10	t = –.88	.385	[–.28, .11]
	6	Engagement_all activities	–.01	.05	t = –.13	.901	[–.11, .10]
	7	Engagement_all activities_leisure	–.02	.06	t = –.27	.787	[–.13, .10]
	8	**Speak/interact._leisure = freq.**	**1.16**	**.30**	**t = 3.93**	**<.001**	**[.57, 1.75]**
		Speak/interact._leisure = occ.	.17	.23	t = .75	.452	[–.28, .63]
		Speak/interact._leisure = never	.00				
	9	Watch.tv.no.subs_leisure = freq.	.03	.22	t = .15	.878	[–.41, .48]
		Watch.tv.no.subs_leisure = never	.00				
	10	**Extr. general motivation = yes**	**–.92**	**.26**	**t = –3.53**	**.001**	**[–1.44, –.40]**
		Extr. general motivation = no	.00				
	11	Extr. integrated motivation = yes	.20	.43	t = .46	.646	[–.66, 1.05]
		Extr. integrated motivation = no	.00				
	12	Intr. stimulation = yes	–.06	.13	t = –.46	.650	[–.3, .20]
		Intr. stimulation = no	.00				
	13	Intr. linguistic stimulation = yes	.36	.23	t = 1.57	.122	[–.10, .82]
		Intr. linguistic stimulation = no	.00				
	14	Age	.02	.14	t = .11	.912	[–.28, .31]
	15	Gender = male	.12	.21	t = .58	.563	[–.30, .54]
		Gender = female	.00				
Random		Residual					
effects		Time 1	2.35	.49	Z = 4.75	<.001	[1.56, 3.55]
		Time 2	.39	.11	Z = 3.55	<.001	[.22, .68]
		Time 3	.35	.11	Z = 3.38	.001	[.20, .63]
		Time 4	.76	.18	Z = 4.19	<.001	[.48, 1.22]
		Intercept (participant)	.19	.08	Z = 2.33	.020	[.08, .44]
AICC			579.01				

Note. β=estimate; SE=standard error; CI=confidence interval; AICC=Akaike Information Criterion Corrected; Extr.=Extrinsic; Intr.=Intrinsic; freq.=engaging in the activity frequently; occ.= engaging in the activity on occasion; yes=presence of motivation type; no=non-presence of motivation type; Reference categories: "School A" for school, "higher" for class-level, "never" for engagement in each activity, "no" for motivation type, "female" for gender; Significant predictors are in bold.

Table 5.25 shows the parameter estimates (β) for textual-interpersonal DM frequency. The results indicated that with all variables under examination taken together, one factor was a significant predictor of textual-interpersonal DM frequency: engaging in the activity of watching TV/films without subtitles only for leisure ($F(1,74)=6.74$, p=.011). More specifically, students who watched TV/films without subtitles only for leisure on a frequent basis had higher textual-interpersonal DM frequency than students who never engaged in the activity (β=.56, SE=.22, p=.011). None of the remaining factors had a significant effect on textual-interpersonal DM frequency (all p's>.097).

Table 5.25 Random-intercept GLMM for textual-interpersonal DM frequency with spoken proficiency, formal instruction, ISLL, motivation, age and gender as fixed effects.

Parameters			**β**	**SE**	**Test**	**p**	**95% CI**
Fixed effects	1	Intercept	.68	1.85	t = .37	.714	[–3.05, 4.41]
	2	Global scores	.04	.12	t = .34	.732	[–.19, .28]
	3	School = School D	.09	.25	t = .37	.711	[–.41, .60]
		School = School C	–.01	.31	t = –.03	.979	[–.63, .62]
		School = School B	.39	.20	t = 1.97	.057	[–.01, .80]
		School = School A	.00				
	4	Class-level = lower	.25	.23	t = 1.09	.283	[–.21, .70]
		Class-level = higher	.00				
	5	Years of formal instruction	.01	.09	t = .11	.916	[–.18, .20]
	6	Engagement_all activities	–.03	.05	t = –.63	.529	[–.13, .07]
	7	Engagement_all activities_leisure	.01	.06	t = .22	.829	[–.10, .12]
	8	Speak/interact._leisure = freq.	.50	.28	t = 1.76	.083	[–.07, 1.06]
		Speak/interact._leisure = occ.	–.10	.23	t = –.44	.661	[–.55, .35]
		Speak/interact._leisure = never	.00				
	9	**Watch.tv.no.subs_leisure = freq.**	**.56**	**.22**	**t = 2.60**	**.011**	**[.13, 1.00]**
		Watch.tv.no.subs_leisure = never	.00				
	10	Extr. general motivation = yes	–.08	.28	t = –.28	.780	[–.64, .48]
		Extr. general motivation = no	.00				
	11	Extr. integrated motivation = yes	.18	.43	t = .41	.684	[–.68, 1.03]
		Extr. integrated motivation = no	.00				
	12	Intr. stimulation = yes	–.11	.13	t = –.86	.394	[–.37, .15]
		Intr. stimulation = no	.00				
	13	Intr. linguistic stimulation = yes	.10	.28	t = .36	.723	[–.44, .66]
		Intr. linguistic stimulation = no	.00				
	14	Age	–.04	.14	t = –.27	.789	[–.32, .25]
	15	Gender = male	–.28	.20	t = –1.42	.163	[–.68, .12]
		Gender = female	.00				
Random effects		Residual					
		Time 1	.34	.10	Z = 3.33	.001	[.19, .61]
		Time 2	.95	.21	Z = 4.44	<.001	[.61, 1.47]
		Time 3	.70	.17	Z = 4.22	<.001	[.44, 1.12]
		Time 4	.83	.20	Z = 4.23	<.001	[.52, 1.32]
		Intercept (participant)	.15	.08	Z = 1.98	.048	[.06, .41]
AICC			557.19				

Note. β=estimate; SE=standard error; CI=confidence interval; AICC=Akaike Information Criterion Corrected; Extr.=Extrinsic; Intr.=Intrinsic; freq.=engaging in the activity frequently; occ.= engaging in the activity on occasion; yes=presence of motivation type; no=non-presence of motivation type; Reference categories: "School A" for school, "higher" for class-level, "never" for engagement in each activity, "no" for motivation type, "female" for gender; Significant predictors are in bold.

5.5.1 Synthesis of statistical findings for RQ3 and RQ4

Section 5.5 looked into which factor(s) contributed to each aspect of DM use when all variables were taken together (i.e. spoken proficiency, formal instruction, ISLL, motivation), age and gender were controlled for, and individual variation and repeated measures (time) were taken into consideration. Whereas previous results for RQ3 revealed the effect of each factor of interest in isolation, results for RQ4 pointed to those factors which stood out, i.e. constituted key contributors to DM use. Table 5.26 summarises the results of statistical analysis for RQ4, indicating factors which constituted statistically significant, positive (+) or negative (–) predictors of DM use.

Table 5.26 Overview of contributors to DM use (all factors taken together).

Factors	**DM use**				
	DM range	**Overall DM frequency**	**Textual DM frequency**	**Interpersonal DM frequency**	**Textual-interpersonal DM frequency**
Spoken proficiency	x	x	x	global scores (+)	x
Formal instruction	x	x	higher class-level (+)	x	x
ISLL	speaking / interacting only for leisure (+)	speaking / interacting only for leisure (+) & watching TV without subtitles only for leisure (+)	speaking / interacting only for leisure (+)	speaking / interacting only for leisure (+)	watching TV without subtitles only for leisure (+)
Motivation	extrinsic integrated (+) & intrinsic-stimulation (+)	x	x	extrinsic general (–)	x
Age	x	age (–)	age (–)	x	x
Gender	x	x	x	x	x

Note. x-no statistically significant effect; (+)-statistically significant positive effect; (–)- statistically significant negative effect.

Firstly, spoken proficiency both in isolation (RQ3) and in combination with all other factors (RQ4) contributed only to interpersonal DM frequency, pointing to the main finding that DM use did not necessarily rise with spoken proficiency except with regard to the employment of interpersonal markers.

In terms of the other factors, results for RQ4 slightly differed from the results for RQ3 owing to the combined study of all factors of interest. Whereas aspects of formal instruction had no effect in DM use when studied in isolation, it was found that when studied in combination with the other factors, attending higher level classes positively impacted textual DM frequency. This is also supported by descriptive findings presented in Section 5.2.1, which showed that teachers in higher-level classes used more textual DMs than in lower-level classes. Moreover, instructional material for higher-level classes tended to include a larger number of textual markers than material for lower-level classes. Nevertheless, it could be argued that lack of contribution of aspects of formal instruction to the remaining aspects of DM use indicates that other factors constituted more important contributors.

Types of motivation contributed only to DM range and interpersonal DM frequency, reflecting the results for RQ3. Students who expressed highly internalised motivations at present (extrinsic integrated and intrinsic-stimulation) were more likely to display wider DM range, whereas those with extrinsic general motives were more likely to display lower interpersonal DM frequency.

Of the demographic factors that were controlled for in statistical analysis for RQ4, gender did not significantly contribute to DM use, whereas age was found to be a negative predictor of overall DM frequency and textual DM frequency, meaning that older adolescents were more likely to employ a lower number of DM tokens and, in particular, textual markers.

Finally, ISLL, and in particular engagement in certain activities, was the only factor which contributed positively to all aspects of DM use both in isolation (RQ3) and in combination with the other factors (RQ4). This constitutes a strong case for the impact of (a) speaking to oneself and interacting (by speaking) with L1/L2 others only for leisure and (b) watching TV/films without subtitles only for leisure, activities which can be considered key contributors to DM use.

- Speaking to oneself and interacting (by speaking) with L1/L2 others only for leisure on a frequent basis was a significant, positive predictor of DM range, overall DM frequency, textual DM frequency and interpersonal DM frequency.

- Watching TV/films without subtitles only for leisure on a frequent basis was a significant, positive predictor of overall DM frequency and textual-interpersonal DM frequency.

Sections 5.4 and 5.5 presented the results of quantitative and qualitative analysis conducted at group-level (i.e. the sample as a whole) and sub-group-level (i.e. the different sub-groups of DM users: considerable, moderate, limited, non-DM users) with regard to the effect of the factors of interest on DM use. The next step is to examine the way important contributors to DM use shape individual DM user trajectories across time, i.e. from beginning to end of the study. Investigation at individual-level enables an in-depth understanding of the interplay of factors in typical cases of participants who followed the group pattern (i.e. were stable in their DM use over time). It also sheds light onto noteworthy but rare cases of individuals who experienced abrupt changes in DM use throughout the study that might have been associated with abrupt changes in the factors of interest, and in particular ISLL, which constituted a contributor to aspects of DM use. The results of analysis at individual-level are presented below.

5.6 RQ5: Individual trajectories of DM use

RQ5 asked: How do the factors of spoken proficiency, formal instruction, ISLL and motivation interact with learners' DM use over time at the individual level? Four individuals were chosen who were different DM users throughout the study and who constituted either typical or non-typical cases, as will be explained below, in order to demonstrate a range of experiences from the cohort. Before examining each case separately, it is important to briefly explain what constituted a typical and a non-typical case.

Typical cases were students who followed the group pattern in terms of DM development. As shown in Section 5.3, the DM use of the group of students as a whole followed a flat trajectory. When individual trendlines were examined, it became evident that students' DM

range and overall DM frequency were never static; although almost one third of participants (n=16 of 52 participants, 30.7%) remained in the same DM user sub-group at all four time-points, no student employed the exact same number and kind of DM types and number of DM tokens throughout the study. The majority of students either remained in the same DM user sub-group at three of the four time-points (n=18, 34.6%) or fluctuated between the same two consecutive DM user sub-groups between two consecutive time-points (n=9, 17.3%). This was interpreted as less substantial change, hence reflecting the group pattern.

Only a small number of students experienced more substantial change in their DM range and overall DM frequency, either more gradual (n=3, 5.7%) or more abrupt (n=6, 11.5%). Those were the non-typical cases. Substantial changes in DM use were observed from Time 1 to Time 2.

Of the four case-studies in this section, Stelios[43] (S24) and Marilia (S20) were typical cases, i.e. their DM use exhibited relative stability over time, reflecting the group's flat curve. At all or most time-points, they belonged to the same DM user sub-group as at Time 1, either at the broader (Stelios) or more limited (Marilia) end of the spectrum of DM use. The non-typical cases were Tzeni (S25) and Ntina (S12), whose DM use underwent change, particularly from Time 1 to Time 2. Their DM use declined (Tzeni) or increased (Ntina) abruptly.

The aim was to examine how the factors of proficiency, formal instruction, ISLL and motivation interacted with stability or changes in DM use from beginning to end of the study for each student. The purpose was to provide complementary information resulting in in-depth understanding of how the parameters which stood out at group-level analysis (i.e. ISLL, motivation), or which were mainly non-significant (i.e. proficiency, formal instruction), manifested at individual level. A more detailed picture of learner experience over time is thus depicted which would be lacking if only examining the group as a whole.

[43] Only for this section, participants are referred to with the use of pseudonyms, instead of numbers.

5.6.1 Typical case: Stelios (stable, considerable DM use)

Although Stelios (male, 16) constituted a typical case in that his considerable DM use showed stability over time, he was the extreme outlier of the study. He was excluded from previous group-level analyses due to his dense DM use compared to the remainder of the sample; his responses comprised a large number of tokens relative to his total word count. Excerpts (1) and (2) below illustrate the range and frequency of Stelios's dense DM use (in bold) in his otherwise short responses.

(1) <R> Did you go out.. in a group? <\R>
<S24> **well** yes I- I took part in a parade **etcetera** uhm **well** in a small group it was fun but **well** nothing special **you know** every year we participate **so** nothing special <\24> (Time 2)

(2) <R> how come you: how come you took up uhm fencing? <\R>
<S24> uhm **well** since I was a- when I was a child I **you know** used to watch the films with zoro (inaudible) **all this stuff so**.. **you know** when I grew up I thought why not? <\24> (Time 3)

Figure 5.16 shows the trajectory of Stelios's DM range and overall DM frequency plotted against the group mean. The student's trajectory was not static but displayed fluctuations over time, reaching a peak in DM range and overall DM frequency at Time 2 and experiencing a decrease at Time 3, which was steeper for DM range. However, those changes were not considered radical, as the student was a considerable DM user at most time-points and a moderate DM user at Time 3, but never a limited or non-DM user.

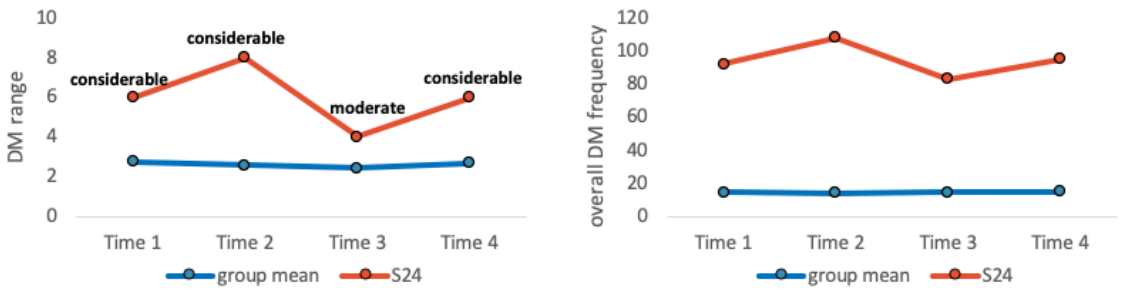


Figure 5.16 Stelios's (S24) DM trajectory.

Stelios attended four hours a week of higher-level classes and had completed a total of eight years of formal instruction at the outset of the study. Upon first contact with the researcher (Time 1), the student appeared reserved in the speaking activities, talked softly, and at times mumbled. Nevertheless, he achieved the highest speaking scores in the sample (high C1 level) and received positive comments by both assessors (e.g. "near native", "overall fluent"). His striking British English accent and high speaking proficiency prompted the researcher to ask him about whether he had any personal connection with the UK (e.g. relatives). Stelios responded negatively and added that he had intentionally adopted a British accent by trying to mimic the way British actors and journalists talked. In his free time, he watched movies mostly without subtitles and listened to podcasts, but his favourite activity was speaking to himself in English on a daily basis, imitating his favourite actors/journalists and repeating lines from movies.

> S24: "*Generally, I really like the actor Stephen Fry, I really like his accent and I'm trying to mimic it. And because he also writes books and has good vocabulary, I like him. And I also like Melvyn Bragg, he is a journalist and hosts shows on BBC Radio 4, and because I listen to podcasts and I really like his accent, I'm trying to imitate him when I talk*" (Time 1)

At Time 1, Stelios's daily ISLL included non-interactive activities, such as speaking to himself in English, listening to podcasts, watching movies and reading comics in English. The student appeared highly motivated at the outset of the study, expressing intrinsic motives for learning and speaking at present, such as a love for the language itself. His ideal L2 self was, not surprisingly, centred around L2 speaking: "*I don't want to be too ambitious, but I want to speak like a native speaker, not to be the best, but an average native speaker*".

As with his DM use, Stelios's speaking proficiency, ISLL and motivation did not change considerably over the course of the study. The student remained among the high achievers, always obtaining high C1-level scores and receiving comments about his "near-native" oral performance, notwithstanding his noticeable reservation and shyness during the speaking activities. Speaking to himself only for leisure on a frequent basis, imitating British actors and journalists, remained his favourite informal L2 activity. Throughout the study, he reported instances of paying attention to spoken language in movies and being drawn to the particularities of the language, such as "*the way it sounds*" and different expressions, indicating the presence of intrinsic-linguistic stimulation as current

motivation. Besides his highly internalised motivation for learning and speaking at present, his visualisation of an ideal L2 self as a fluent L2 speaker persisted throughout, indicating little present-future self-discrepancy.

5.6.2 Typical case: Marilia (stable, limited DM use)

Another typical case was Marilia (female, 14), although at the opposite end of the spectrum of DM use from Stelios. Marilia remained a limited DM user throughout the study. Figure 5.17 depicts her trajectory of DM range and overall DM frequency, which showed no fluctuation over time. The student had the most stable trajectory of DM use in the whole sample, as she employed the same DM types (*well, so*) and had similar relative DM frequency at all time-points.

Figure 5.17 Marilia's (S20) DM trajectory.

Besides employing *well* and *so* rather than any of the other markers, Marilia's DM use was restricted also in terms of the DM functions signalled. For example, as shown in excerpts (3), (4) and (5), the student, at all time-points, used "well" predominantly to introduce a response to a question.

(3) <R> okay what did you see in this video? <\R>
<S20> eh: **well** in this video I could see ehm: that young people today uhm: eh: spend uhm many much time on social networking and they post photos of everything they do […] <\S20> (Time 1)

(4) <R> perfect.. some people say that dogs are man's best friend do you agree or not? <\R>

<S20> okay ehm **well** to be frank I totally agree with this statement because uhm I think that eh: that a dog can be ehm ehm a better friend than a human for a girl or a boy eh and it can […] <\S20> (Time 2)

(5) <R> nice and do you like watching sports more or participating in sports and why? <\R>
<S20> eh: **well** uhm I prefer participating in sports because eh: I think that it's much more interesting and uhm I uhm I really I'm really bored watching them <\S20> (Time 3)

Marilia attended eight hours of lower-level classes per week and, upon participation in the study, had completed six years of formal English instruction. At Time 1, Marilia's speaking performance was at low B2 level. The student had limited ISLL, as the only two informal activities reported at the first time-point were listening to music with English lyrics and reading song lyrics. Marilia expressed extrinsic external motivation when describing her Current L2 Self and envisioned an Ought-to L2 self, mentioning future job prospects ("*I would like to get the certificate, because this will show to my future employers that I'm at a level where I can use the language well and this is why we come to this school*").

Over time, a few changes were observed in Marilia's ISLL and motivation. The student reported engaging in more out-of-class activities over time, such as watching videos on YouTube and reading online articles. However, she never reported carrying out any of the key activities that were found to contribute to broad and frequent DM use. Marilia maintained an Ought-to L2 self throughout the study but developed intrinsic motivation linked to both learning inside the class and informal L2 activities, as she expressed satisfaction for being able to understand and use the language on a daily basis (intrinsic-accomplishment). Despite reporting more internalised motivation over time, she rarely referred to L2 speaking when describing her Current L2 Self. As expected, these changes were not accompanied by any changes in her DM use. Marilia's speaking proficiency remained at low B2 level.

5.6.3 Non-typical case: Tzeni (abrupt decrease in DM use)

Tzeni (female, 16) constituted the rarest case in the present study; compared to the remainder of participants, the student underwent the most abrupt and unexpected change in DM use between two consequent time-points. Figure 5.18 shows the trajectory of Tzeni's DM range and overall DM frequency plotted against the group mean. Although Tzeni was categorised as a considerable DM user at Time 1 (using 8 out of 10 DM types), her DM range experienced a substantial decrease at Time 2, rendering her a limited DM user at that time-point (using 1 out of 10 DM types: *so*). The student's DM range did not climb back to the initial figures but remained at a low level, except for a slight, final increase, rendering her a moderate DM user at Time 4. Even though Tzeni had the highest relative DM frequency at Time 4 compared to previous time-points, that was due to frequent use of two of the three DM types in her discourse (*so*, *well*) relative to her small word count at that time.

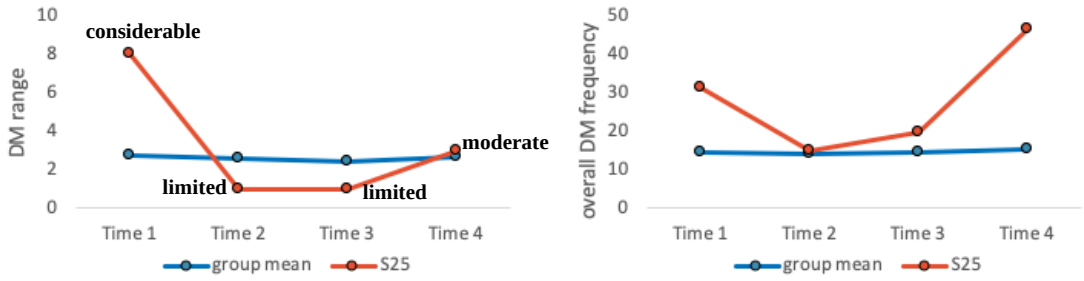


Figure 5.18 Tzeni's (S25) DM trajectory.

Excerpt (6) illustrates Tzeni's wider DM range at Time 1, whereas excerpt (7) shows that she only employed the marker *so* at Time 2.

(6) <R> do you like Athens? <\R>
<S25> yeah.. it's different from- I like Patras more because ehm Athens has more places to go **like** it has malls and many cafeterias like Starbucks that we don't have here and […] and yeah but Patras may be more small but **I don't know** I think it's **kinda** better <\S25> (Time 1)

(7) <R> what did you see in this video? <\R>
<S25> uhm **so** basically it shows us some signs that we are addicted to social media uhm and they're people who take photos of nearly everything they do and post them online uhm: in order to get likes and comments […] uhm first it was about a girl who

went on her first interview **so** she posted her new shoes, uh: and then it was a guy who went to uh the countryside and he posted abou- and he posted about it uhm and then it was a girl uh who was taking pictures of everything she was eating in order to post them <\S25> (Time 2)

Tzeni attended high-level classes and had completed eight years of formal instruction at the outset of the study. Upon participation in the speaking activities at Time 1, Tzeni was more talkative than at the remaining time-points and achieved a low C1 score. The student expressed internalised extrinsic motivations for learning English (extrinsic identified), as it enabled her to access personally relevant, informal L2 activities. The student reported being "addicted" to English movies and TV shows, watching on a frequent basis without subtitles, and praised their quality over Greek ones. Unlike most considerable users at Time 1, Tzeni did not engage in any type of out-of-class L2 speaking. Furthermore, she did not mention the speaking skill when describing her Current L2 Self, although her Ideal L2 Self was a fluent L2 speaker, able to communicate effortlessly with L2 others during trips abroad.

Tzeni's speaking proficiency did not undergo significant change over time but fluctuated between average B2 and average C1 level. Similar to her DM use, the student's ISLL and stated motivations changed profoundly after Time 1. At all subsequent time-points, Tzeni reported having reduced considerably the amount of TV watching, which had become an occasional activity or was never carried out because of parental pressure and a tight school schedule. Instead, the student reported having taken up reading books both for leisure and homework as it constituted "*good preparation for the exams*". The urgency of exams became a constant theme in her statements at all subsequent time-points and a reason for taking up new informal L2 activities only for homework (e.g. listening to podcasts as recommended by her teacher) or discontinuing otherwise frequent L2 leisure activities (e.g. deactivating her Instagram account at Time 2). Her current motivations became less internalised over time and an Ideal L2 Self (Time 1) was replaced by an Ought-to L2 Self (Times 2, 3, 4): the student referred to extrinsic external motives such as the necessity to know English for a future job and the need to eventually leave Greece to study/work abroad because of the country's weak economy.

Tzeni's abrupt change in DM use could be related to the aforementioned changes in her ISLL and outlook on L2 learning; from being associated with personally relevant

endeavours at Time 1, English became more associated with externally imposed requirements and instrumental goals at subsequent time-points, evidently influenced by aspects of learning in formal contexts (exam preparation). It is also of interest that the student went from using almost all markers under examination (Time 1) to mainly employing the marker *so* (Times 2, 3, 4), a DM overrepresented in her teacher's discourse (Teacher 2) and her textbook, compared to the remaining DM types, and therefore possibly more acceptable for use in formal settings (e.g. exams) than some of the other markers (e.g. *kinda, and stuff, like*) which she employed at Time 1.

5.6.4 Non-typical case: Ntina (abrupt increase in DM use)

Another non-typical case was Ntina (female, 14) who displayed a pattern of change in DM use opposite of Tzeni's. Ntina started as a limited DM user at Time 1. Similar to Tzeni, Ntina was one of the few students in the sample whose DM use underwent an abrupt change, and she was the only participant who "jumped" from the limited DM user sub-group to the considerable DM user sub-group between two consecutive time-points.

Figure 5.19 depicts Ntina's trajectory of DM range and overall DM frequency. After initiating the study as a limited DM user (2 DM types) and jumping to the considerable DM user sub-group at Time 2 (5 DM types), Ntina's DM use slightly decreased at Time 3 (4 DM types), and the student was recorded making considerable DM use at Time 4 (5 DM types) with her DM frequency reaching a high peak at the end of the study.

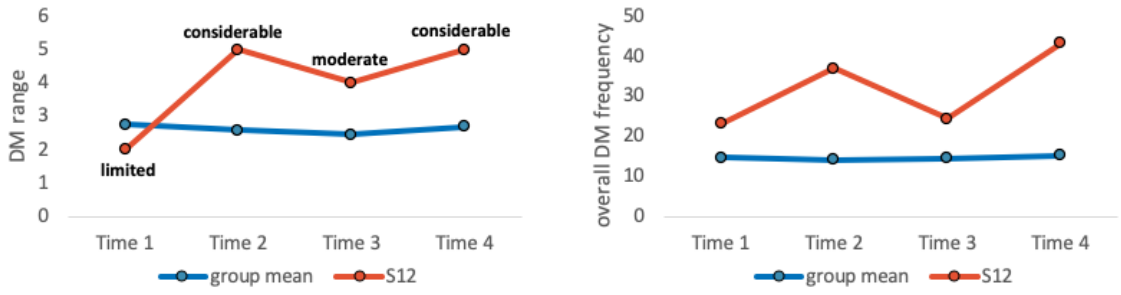


Figure 5.19 Ntina's (S12) DM trajectory.

As evident from excerpt (8), Ntina only employed the marker *actually* at Time 1; however, her DM use at Time 2 was more varied, as shown in excerpt (9).

(8) <R> and at the end what happened with those guys here? <\R>
<S12> yes there were four people around their desk but all of them they were looking at their phone.. and the pictures that other people were posting.. and they took all pictures together saying that they have eh: too much fun with eh: their friends.. but **actually** they weren't discussing with each other.. just they were looking at their phones <\S12>
<R> perfect.. are you like those people? <\R>
<S12> eh: not really.. **actually** I don't like posting photos <\S12> (Time 1)

(9) <S12> […] when I'm looking to their photographs that are uploaded on the social media they are always commenting everything.. and it is **kind of** upsetting sometimes <\S12>
<R> […] I want you to compare these pictures and tell me why you think these people enjoy these activities <\R>
<S12> ah okay.. **well** in the first picture I can see three men playing a video game.. **actually** a football match.. while in the in the other picture I can see three children who are playing all together different music instruments.. eh: **well** I think the men are enjoying this because they love playing video games and they have eh made everything look so real that it really and this really affects to start playing this game whilst in the other picture they actually seem to do it because it is **just** fun and they love music and having some time together and it seems that they really enjoy it <\S12> (Time 2)

Ntina was enrolled in higher-level classes, attended five hours of formal instruction per week and had completed a total of six years of previous formal instruction at the outset of the study. Ntina started with a high B2 level of speaking proficiency and had limited ISLL at Time 1: the student watched movies with Greek subtitles on traditional TV on occasion and the rest of her ISLL was only for homework purposes, such as listening to podcasts recommended by her teacher and reading articles on her mother's computer for additional exam practice. The student expressed external extrinsic motivation for learning at present and an Ought-to L2 self, as her reasons for L2 learning were related to gaining external rewards and experiencing feelings of pride for meeting social standards (extrinsic external and extrinsic introjected motivations): "*I would like to reach a very high level so that my*

CV gets more attention for example in the future, and so that I get more respect from others through my English".

Ntina's abrupt increase in DM use after Time 1 appears to be associated with a critical moment that took place during the Christmas break, between Times 1 and 2, and which is also believed to be related to changes in her ISLL and motivation. At Time 2, Ntina mentioned that she had gotten her first laptop over the Christmas holidays, enabling her to access resources in English that were unused by her before: Netflix, YouTube and social media. Frequent watching of teen TV series and YouTube videos only for leisure were sustained informal L2 activities at all subsequent time-points. Although Ntina had associated ISLL with homework and exam practice at Time 1, a qualitative change in her outlook was observed at the remaining time-points. Reasons for learning at present were so that she could keep up with her new favourite teen dramas (Stranger Things, Riverdale), and watch interviews of favourite actors on YouTube and follow them on Instagram (intrinsic identified motivation). Moreover, Ntina expressed feelings of accomplishment for understanding English without the use of subtitles (intrinsic-accomplishment) and her speaking scores reached a high peak at Times 2 and 3 (mid C1 level). Although she maintained an Ought-to L2 self, Ntina's relationship with English appeared to have become more personalised, motivations describing a Current L2 Self more internalised, and the student exhibited more confidence and enthusiasm over time in the speaking activities with the researcher.

5.6.5 Summary

The following conclusions regarding RQ5 can be drawn from a CDST viewpoint. Stable trajectories indicated that students' DM use had self-organised in an attractor state. Stability in DM use appeared to be related to stability in ISLL and motivation which possibly functioned as strong attractors throughout the study. For Stelios and Marilia, wherever there were changes in the parameters (e.g. ISLL, motivation, speaking proficiency), these did not appear to be of the magnitude or quality to bring about any substantial change in DM use and move the system out of its attractor state. For Stelios, his stable ISLL, whereby speaking to himself frequently only for leisure constituted the principal informal L2 activity at all times, alongside continuous, highly internalised motivation to speak, possibly functioned as powerful attractors. Most students who were similar to Stelios and were categorised as considerable DM users at the beginning of the

study, settled into deep attractor states of considerable/moderate DM use. Conversely, Marilia, as with the majority of participants, had lodged in a long-term attractor state of limited DM use.

Only few students (e.g. Tzeni, Ntina) experienced changes in DM use, particularly from Time 1 to Time 2 when a possible perturbation might have occurred, and their system underwent phase transition. Changes in the parameters appeared to have challenged the behaviour of each student's system, guiding the system to self-organise into a different attractor state at Time 2 and onwards. Abrupt changes might have been related to critical incidents which were linked to important changes in students' ISLL and motivation. The commencement (in the case of Ntina) or termination (in the case of Tzeni) of ISLL activities, combined with shifts in motivation, appeared to have constituted forces that jolted the system out of its fixed-point attractor state into a new state, where the system settled for the remainder of the study.

The fact that such abrupt changes in DM use were recorded between Time 1 and Time 2 could be because this time-period constituted the widest spacing between two consecutive time-points of data collection; therefore, this gap in data collection might have allowed enough time for changes to manifest. However, a slightly different interpretation can be given if this is examined through the lens of the contributing factor of ISLL: the time-period between Time 1 and Time 2 coincided with the Christmas break and thus more time spent outside the school and possibly in informal L2 contexts. This might have resulted in the termination of old or commencement of new informal L2 habits.

This chapter presented the results of analysis conducted to address each RQ. The implications of the results and their contribution to the literature are discussed in the following chapter, in relation to previous research.

Chapter 6. Discussion

Situated within the Complex Dynamic Systems Theory (CDST) and usage-based language learning theoretical framework, the present study pursued a three-fold aim: (a) to provide a description of Greek adolescent EFL learners' spoken DM use focusing on the markers *so*, *well*, *just*, *like*, *I don't know, actually/in fact, you know*, *I mean*, *sort of/kind of,* and the category of general extenders; (b) to examine whether students' DM use developed over the course of five months during a school year; and (c) to identify the impact of the factors of spoken proficiency, formal instruction, informal second language learning (ISLL), and motivation on learner DM use over time both at group- and individual-level. This chapter reviews the main findings of the study and interprets them in light of previous research and theory, while pointing to their contribution to existing knowledge.

Arguably, the most important finding was that broad and frequent use of DMs that signalled textual, interpersonal, and textual-interpersonal functions in the speech of Greek adolescent EFL learners during speaking activities with the researcher was more related to consistent, out-of-class, personalised engagement with English for leisure and was less so the result of high spoken proficiency or exposure to DMs during formal instruction. This highlights the determining role of self-initiated and internally motivated exposure to and production of spoken language outside the class in language learning and constitutes a novel finding which adds to the literature of the emerging field of ISLL supported by the use of technology and the internet. Before discussing the importance of this finding, it is necessary to firstly understand how frequent and broad students' DM use was compared to previous findings of learners of English in similar and different learning contexts. Secondly, it is important to examine the extent to which overall stability in DM use, which was another main finding of this study, corroborates or contradicts previous research. These two issues will then be interpreted in light of the individual and contextual factors examined in the present study with a particular focus on the critical role of ISLL. This chapter discusses how some of the present findings accorded well with previous research and how others offered novel insights, adding to the fields of ISLL and L2 motivation as well as the area of learners' spoken DM use in the field of L2 pragmatics.

6.1 Greek adolescent EFL learners' overall limited DM use

RQ1 asked: What are the characteristics of DM use in Greek adolescent EFL learners' spoken discourse with regard to the following markers: *so, well, just, like, I don't know, actually/in fact, you know, I mean, sort of/kind of,* and the category of general extenders? The results revealed that participants, who were Greek adolescents attending weekly exam preparatory classes in an EFL context with the aim to obtain English language certificates, generally made limited to moderate DM use, whereas only a smaller number of those students made considerable DM use, displaying broader range and higher frequency. Limited to moderate DM use was a characteristic of the whole sample, of students both in lower-level classes (studying towards a B2 level certificate) and higher-level classes (studying towards a C2 level certificate).

It was not the focus of the present study to compare learner DM use to a yardstick of native-speaker (NS) use, which is often the case with studies in L2 DM use, but, instead, make between- and within-learner comparisons. Therefore, the characteristics "limited", "moderate" and "considerable" were created solely to compare the varying extent of DM use among the students and it cannot be asserted that, for example, they underused or overused certain DMs.

However, the finding that most participants' DM use was towards the "more limited" end of the spectrum converges with findings of previous research that has compared learner to NS DM use. Previous studies have provided evidence that, comparatively, learners' DM use is often restricted in terms of frequency and range (Müller, 2005; Beeching, 2015; Liu, 2016), despite some exceptions of overuse, such as the marker *well* (Müller, 2005; Gilquin, 2016) or markers signalling a textual function (Ament et al., 2018). Another finding of this study that learners made more widespread use of textual markers and more limited use of interpersonal (and textual-interpersonal) markers, has also been documented in previous literature (Fung & Carter, 2007; Buysse, 2015; Jakupčević, 2019).

Students' use of two of the 10 DMs under examination, *so* and *well*, which were dominant in their speech, is consistent with the findings of studies showing that EFL learners overuse those two markers in particular (Gilquin, 2008; Aijmer, 2011; Buysse, 2012). At the same time, students' employment of the remaining DMs to a lesser extent (*just, like, I don't know, actually/in fact, you know, I mean, sort of/kind of,* and the category of general extenders) is consistent with previous findings on learner language. Especially the markers

you know, *I mean*, *like* and *kind of/sort of* have been found to be used infrequently by learners (Fung & Carter, 2007; Buysse, 2012; Gilquin, 2016). As with this study's participants, limited DM use has been witnessed both in the discourse of lower-level students (e.g. Neary-Sundquist, 2014) and advanced learners at the end of their formal instruction (e.g. Buysse, 2011).

The present study corroborates previous research that has established the limited spoken DM use of learners of English of various ages, L1 backgrounds, and contexts of language learning (e.g. Study Abroad, English as a Medium of Instruction, immigrants in ESL classrooms, EFL contexts). This research further extends such claims to adolescent (13-17-year-old) L1 Greek EFL learners, a population which has received little attention in terms of their spoken DM use in English. Since Greek EFL learners seem comparable to other learners, this suggests that the present findings can be generalised.

RQ1a asked: How is the learners' DM use similar to or different from DM use in their teachers' discourse and the DM content of instructional material with regard to the markers under examination? The findings indicated that the overall sample's more limited DM use, overreliance on *well* and *so,* compared to the remaining markers, and imbalanced use of functional categories (i.e., higher frequency of textual than interpersonal markers) mirrored the DM input in formal instruction. Previous research has attributed limited learner DM use to the poverty of DM input in formal education settings (Hellermann & Vergun, 2007; Buysse, 2017). However, unlike the current research, studies have not examined all three agents in the language classroom (teachers, students, instructional material) and drawn links. This renders the present findings even more revealing. The main similarity between learners' DM use and DM use by teachers and instructional material was the reliance on certain DMs (*so, well*) and absence of others. This finding is supported by research which has shown the extensive use of *so* in teacher talk and absence of other markers (Hellermann & Vergun, 2007; Vickov & Jakupčević, 2017), as well as the overrepresentation of *well* in textbooks, with less use of other DM types (Müller, 2005; Mukherjee & Rohrbach, 2006; Gregori Signes et al., 2016), suggesting that the Greek EFL context is not exceptional. The finding that textual functions prevailed in learners' discourse and textbooks rather than teachers' discourse, suggests that textbooks, rather than teachers as previous studies have posited (Ament et al., 2018), might have constituted an indirect model for students' frequent deployment of textual markers.

It must be noted that DM input was not equally restricted in all schools and class-levels. Teachers in schools A and B had broader and more frequent DM use than teachers in schools C and D, and DM input in higher-level classes tended to be more increased and varied than in lower-level classes. Despite this, students' more limited DM use might have been related to teachers' instructions and the way the use of certain DMs may be perceived in formal contexts. This study did not examine the explicit instruction of DMs. However, as evident in some students' statements regarding their attributions for their DM learning and/or use (Section 5.4.3.8), teachers had apparently instructed students to use *so* and *well*, in particular, for exam-centred, instrumental purposes (e.g. to "*sound spontaneous*" in front of the examiners and "*earn points*"). The ubiquity of *so* and *well* in teachers' discourse or material content might be related to their wide acceptance in language learning settings, as they are perceived to be appropriate both in formal and informal registers (Buysse, 2015). It is not surprising that considerable/moderate DM users who employed more colloquial DMs (*like*, *you know*, *I mean*, *kinda*, the general extender *and stuff)* attributed their DM learning and/or use to exposure to input from informal sources. As a small number of students asserted and as previous research has suggested, such markers are stigmatised and regarded as too informal for academic settings (Miskovic-Lukovic, 2009; Buysse, 2019; Davydova, 2019). As expected, those DM types appeared with low frequency or were absent from most teachers' discourse and instructional material.

6.2 Stability in DM use over time

RQ2 asked: How does Greek adolescent EFL learners' DM use change over time? Participants' DM use did not undergo significant change throughout a 5-month period. Students' lack of DM development was neither an anticipated nor surprising finding given the lack of strong evidence in previous literature to suggest otherwise. The findings of previous, albeit scarce, longitudinal studies in Study Abroad or ESL contexts have been largely inconclusive, with some studies documenting increase in DM frequency over time (Tavakoli, 2018; Magliacane & Howard, 2019), whereas others report no development (Magliacane, 2020), and even decline (Polat, 2011). The present study adds to existing knowledge as it has shown that in EFL contexts, which have received little if any attention in longitudinal spoken DM research, spoken DM use remains stable. This has important implications because it can lead to a better understanding of possible factors that might

have induced stability in DM use further informing about the nature of EFL contexts and suggesting ways for positive development to occur.

Overall stability in DM use over time was shown through the use of Generalized Linear Mixed-effects Modelling, an advanced statistical technique which, despite calls in the literature for the employment of appropriate quantitative methods for the assessment of L2 development (Ortega & Iberri-Shea, 2005; Cunnings 2012; Barkaoui, 2014; Hiver & Al-Hoorie, 2020), has only recently gained more recognition in longitudinal SLA (e.g. Murakami, 2016; Nagle, 2018). This method took into account individual variation and assessed the possibility of non-linear development, given that nonlinearity is a characteristic of the learning process according to CDST (de Bot & Larsen-Freeman, 2011), which the present study draws upon. Although DM use at group-level displayed a flat curve, with no indication of linear (i.e. increase, decrease) or non-linear development (e.g. fluctuation), qualitative, individual-level analysis (RQ5) revealed that DM use was not static for each learner. Students did not employ the exact same number of DM tokens of the exact same DM types at every time-point, even if the majority remained in the same DM user sub-group at most or all time-points. It can therefore be concluded that there was fluctuation, albeit minor in most cases or not such to achieve statistical significance at group-level. In addition to that, whereas individual variability did not reach statistical significance, there were rare cases identified; a few students (n=3, 5.9%) underwent abrupt changes in their DM use, but because of their small number were overshadowed by the group-level results.

These findings firstly highlighted the strengths of employing both methods (quantitative, qualitative) and both levels of analysis (group, individual) to examine the pragmatic phenomenon, given that a clearer and more informed picture was drawn, corroborating others who have advocated a mixed methods approach in L2 pragmatics research (e.g. Taguchi, 2018). Secondly, drawing on Hiver and Al-Hoorie's (2016:744) "dynamic ensemble", empirical light was shed on the CDST notions of "attractor state" and "phase transition". The present study argues that most learners' DM use had settled into an attractor state, as manifested by fairly stable behaviour in their system. Because stability was documented throughout a considerable period of the school year (at four time-points over five months), this implies that the attraction was so powerful that systems were anchored into "a deep-sided attractor basin" (Chan et al., 2015:252). The greater the stability, the greater the force that is necessary to induce a phase transition, whereby the system undergoes significant change, either positive (e.g. increase in DM use) or negative

(e.g. decrease in DM use) and, as a result, leaves its previous attractor state and self-organises into a new attractor state (Larsen-Freeman & Cameron, 2008; Vespoor, 2015). This study provided evidence that in the case of most participants, such phase transition did not occur. The significance of this finding lies in the fact that stability has its place in a learning trajectory; understanding which factors accompany more or less desirable stability can help orient future learning practices. For the rare cases that stood out because of an abrupt increase or decrease in DM use, especially from the first to the second time-point, this was interpreted as the system leaving the initial attractor state it occupied at the beginning of the school year. Because the magnitude of change in DM use resulted in those students' categorisation into distinctly different DM user sub-groups for the remaining time-points from the one they belonged to at Time 1, this was interpreted as the system self-organising into a new attractor state after the first time-point, as a result of phase transition.

6.3 Informal Second Language Learning: The most important contributor to broad and frequent spoken DM use

The examination of the factors of spoken proficiency, formal instruction, ISLL, and motivation assisted in the interpretation of the two main findings: (a) students' overall limited DM use, with only a small number of participants employing a wider range and higher frequency of DMs, and (b) stability in DM development. In CDST terms, those factors were considered to be the "control parameters" of each learner's system of DM use, influencing the system into its attractor state for the majority of cases or inducing highly influential changes, resulting in phase transition for a few rare cases. The present study aimed to examine the effect of each factor separately in order to answer RQ3 (How do the factors of spoken proficiency, formal instruction, ISLL and motivation each impact learners' DM use over time?). This constituted a preliminary step before combining all factors and addressing RQ4 (Which of the factors of spoken proficiency, formal instruction, ISLL and motivation, taken together and controlling for age and gender, contribute(s) to broad and frequent learner DM use over time?). The overall answer to RQ3 and RQ4 is that, compared to the other factors, ISLL was positively related to and constituted the most important contributor to spoken DM use. This was substantiated by individual-level investigation. RQ5 asked: How do the factors of spoken proficiency, formal instruction, ISLL and motivation interact with learners' DM use over time at the individual level? The answer is that, of all factors, ISLL was identified as the control

parameter that acted as the determining force which induced stability or change in DM use over time. Therefore, this factor will be discussed first, covering issues such as the importance of type of ISLL in addition to frequency, and how the findings inform the implicit-explicit debate, among others. The impact, or lack thereof, of each of the remaining factors on aspects of DM use is discussed in subsequent sections in relation to previous literature.

6.3.1 Frequency and type of ISLL

The three informal, out-of-class activities which were significant predictors of broad and frequent DM use when individual variation, repeated measures (time) and all other informal L2 activities were taken into account (RQ3), as well as when individual variation, repeated measures (time) and all remaining factors were taken into account (RQ4) were: (a) speaking to oneself for leisure frequently, (b) interacting (by speaking) with L1/L2 others only for leisure frequently and (c) watching TV/films without subtitles/captions only for leisure frequently. Those will be referred to in this chapter as the "key activities". This sub-section highlights characteristics of these key activities and discusses possible reasons why these activities, in particular, stood out as predictors of frequent and broad DM use, as well as the significance of their role, contrary to the remaining activities.

Usage-based theories in SLA hold the role of repeated usage of the language as well as frequency of constructions in the input to be vital for language acquisition (Bybee, 2008; Wulff & Ellis, 2018). The present findings lend support to usage-based theories, such as Ellis's CREED (2006; 2019), considering the characteristics of engagement in the three key activities. The study showed that the key activities had an impact on DM use when carried out frequently (weekly or daily) rather than on occasion. More importantly, engagement was not only frequent at one point in time but constant throughout a 5-month span, constituting a consistent habit. Furthermore, this frequent engagement combined language reception (i.e. watching TV/films without subtitles), production (i.e. speaking to oneself) and interaction (i.e. interacting by speaking with L1/L2 others). From the aforementioned characteristics and for reasons that will be detailed in this sub-section, it can be assumed that during engagement in key activities participants were exposed to and perhaps also used DMs, which may have been frequent in the input. Suggestions remain speculative given that collecting DM data from students' actual L2 engagement outside the classroom was not within the scope of this study.

It can be argued that engagement in the remaining twenty activities did not involve the characteristics of the three key activities. For example, some activities were carried out on occasion and therefore not with the optimal frequency that could encourage frequent exposure to and/or use of DMs. Of the activities that were carried out frequently, spoken DMs might not have been frequent in the input during the activity (e.g. when reading online articles) due to differences in the modality and formality of discourse: written as opposed to spoken.

The finding that broad and frequent DM use was related to frequency of engagement in three activities rather than frequency of overall engagement (i.e. all 23 activities) or frequency of engagement in any of the remaining twenty activities, points to the importance of the type of activity engagement in addition to frequency. This is in line with studies which have shown that frequency of engagement alone is not associated with language outcomes (Cole & Vanderplank, 2016; Lee, 2019). The finding is also supported by Gilquin's (2016) view that simply the availability of opportunities for engaging with the L2 informally in EFL contexts does not guarantee that all learners will engage in them, nor, as this study showed, that they will benefit in their DM use from all activities equally. The study adds to previous knowledge by specifying the types of activity that may impact certain language outcomes, in particular identifying three specific activities, engagement in which contributed to broad and frequent spoken DM use.

There are various reasons, albeit speculative, why those activities, in particular, stood out. Firstly, it can be argued that students who interacted with L1/L2 others were likely to be exposed to DMs used by their interlocutors. As has been posited, DMs are frequent in spoken, naturalistic social interactions because, among various functions, they create coherence, establish common ground and social rapport between speaker and hearer, ensuring communication flows smoothly (Aijmer, 2002; Fung & Carter, 2007; D'Arcy, 2017). Studies have also shown that pragmatic features can be present in communication not only face-to-face but also through synchronous (video and audio chat) computer mediated communication and mobile technologies (Sykes, 2018). Indeed, a few considerable/moderate DM users attributed their DM use to DMs being employed by their L2 friends during their video calls or voice message exchanges.

Spoken interactions could have reinforced not only reception but also production of DMs. This study did not collect data from students' actual spoken communications outside the

classroom. However, present findings converge with previous DM research that has associated broader and/or more frequent DM use with interaction with L2 others (Müller, 2005; Polat, 2011; Liu, 2016) or that has highlighted the importance of social interaction in the acquisition of DMs (Sankoff et al., 1997; Hellermann & Vergun, 2007), even to a greater extent than any other linguistic feature (Romero-Trillo, 2012). The finding also reflects L2 pragmatics research, in general, which has underscored the role of meaningful, real-life interaction with members of the speech community in the acquisition of different aspects of L2 pragmatics (Taguchi, 2015a; Taguchi & Roever, 2017; Sánchez-Hernández, 2018; Gonzáles-Lloret, 2019).

The present study broadens the perspective of previous research because it showed that interaction associated with broad and frequent DM use need not be with a "native speaker" in the traditional sense as has been conceptualised (Sankoff et al., 1997; Müller, 2005). Instead, English spoken interaction can range from talking in English to speakers of different L1s (not necessarily English) to talking to others of the same L1 background as the speaker's (i.e. Greek) to even talking to oneself, imitating language heard elsewhere or addressing an imaginary audience. Furthermore, this study showed it is not required that such interaction takes place within a country where the target language is dominant. There, access to L2 speakers is expected but not always guaranteed, for reasons pertaining to the newcomers' stance to socialisation with the target language community and the target language community's attitude towards outsiders (Liao, 2009; Roever et al., 2014; Magliacane, 2020). In L1 contexts, opportunities for L2 communication can arise through the internet and smartphone apps. In digital spaces, the boundaries between "native" and "non-native" or "language learner" and "language user" may be less obvious or relevant given that communication is triggered and sustained by similar interests and/or participation in the same community, as the present findings suggest (e.g. fans of the same singer or game, members of a YouTube community). Conversely, boundaries may be more prominent in ESL/Study Abroad settings given the more obvious distinction or unequal status between "local" and "immigrant" or "target language community" and "outsider" (e.g. Liao, 2009; Hassall, 2015; Magliacane, 2017). The reconceptualization of L2 interaction prompted by this study is important because it suggests that learners in the EFL context might not be at such disadvantage as has previously been argued; taking advantage of ISLL opportunities to use the language can have positive effects in EFL learners' spoken DM use.

Similar to spoken interaction, watching TV/films without subtitles/captions might have provided students with opportunities for exposure to authentic input where DMs were likely to be frequent, unlike in other activities that might not have involved such exposure (e.g. reading articles online). Although no data were collected from out-of-class DM input, it is not unreasonable to surmise that students were exposed to DMs in TV/film dialogue. Scholars have documented the repetitive presence of DMs in TV/film dialogue, especially of markers such as the ones examined in the present study and those employed principally by considerable/moderate DM users (e.g. *you know*, *I mean*, *kind of*, utterance final *so* in Quaglio, 2009; *like*, *I mean*, *you know* in Bednarek, 2018; *I mean*, *you know* in Pettersson-Traba, 2018). Perhaps not surprisingly, a few students attributed their DM use to DMs heard in TV/film discourse. The finding that engagement in such an activity contributed to frequent DM use accords with findings from previous smaller-scale studies conducted in ESL contexts (Liao, 2009; Liu, 2016); this study extends such claims to the EFL context.

The apparent role of TV/film watching in frequent DM use indicates that exposure to authentic input can be achieved in EFL contexts. This study extends the perspective of previous DM research that has either relied on assumptions about the status of the English language in the learner's home country (Gilquin, 2016) or has studied exposure to authentic input in the traditional sense, such as the number of times students have been to an English-speaking country, the length of time spent there or the exposure to authentic input within that country (Müller, 2005; Beeching, 2015; Liu, 2016).

The present study also indicated that frequent DM use was not related to exposure to authentic input in general and from various sources, as has been conceptualised in previous studies (e.g. Gilquin, 2016; Liu, 2016), but rather exposure to a specific type of input (spoken) and from a specific source (social interactions, TV/films). For example, frequent DM use was associated with watching TV/films without rather than with the use of subtitles/captions, supporting previous research that has documented a positive relationship between out-of-class, non-subtitled TV/film watching and other L2 aspects (e.g. vocabulary knowledge in Peters, 2018). Watching without subtitles/captions might direct the viewer's attention from both reading and listening to only listening and consequently to linguistic features, such as DMs, that are prevalent in spoken TV/film discourse but might be absent from subtitles/captions. This interpretation is partly motivated by the findings of previous research which has documented the absence of DMs from subtitles/captions due to brevity purposes (Chaume, 2004; Bruti & Zanotti, 2014), difficulties in translating (Aijmer, 2007; Cuenca, 2008) and low quality of subtitles/captions (Vanderplank, 2016a),

especially for material viewed on or downloaded for free from websites of dubious legal standing, which some participants reported using. Understanding the nature of the source is important because it can shed light onto the input learners are exposed to and the suitability for the activity to encourage DM exposure (and use).

It was watching non-subtitled TV/films rather than videos (e.g. on YouTube, Instagram) that contributed to frequent DM use, despite previous evidence that has documented the presence of DMs in online videos (Tolson, 2010; Frobenius, 2014). Watching non-subtitled TV/films might require more attention to the spoken discourse (which might comprise DMs) than, for example, watching a video of a vlogger. The most popular genre among student-participants was teen dramas. It could be the case that following the plot, which stretches over several episodes, understanding the various characters and appreciating a plot twist or climax in the drama require more attention to the spoken discourse of a non-subtitled TV show (and film, for the aforementioned reasons) than that of a non-subtitled online video. Furthermore, on websites such as Instagram and YouTube, the multitude of videos available might result in viewers watching multiple videos from different sources within a short time span in a scattered way, whereas it can be argued that there is higher level of engagement when watching a film/TV show owing to sustained attention required.

6.3.2 Noticing and input processing

Although the interpretations discussed in 5.3.1 are only speculative, they are plausible if considered in relation to the Noticing Hypothesis, which is compatible with usage-based theories (Schmidt, 2010). The Noticing Hypothesis posits that noticing (through attention) is an important prerequisite of L2 acquisition, in general, and L2 pragmatic acquisition, in particular, and that it may lead to pragmatic acquisition when combined with subsequent processing of input (Kasper & Rose, 2002; Taguchi & Roever, 2017). This study reinforced the importance of noticing and subsequently processing the input because it further showed that it was a specific form of noticing and input processing that distinguished the broader from the more limited DM users. More specifically, in terms of noticing, whereas more limited DM users mentioned having noticed specific content words/phrases in isolation in audio or audio-visual input, considerable/moderate DM users reportedly also focused on the overall spoken production (i.e. the bigger picture). According to Schmidt (2010), attention to linguistic forms together with social and

contextual features is necessary for the acquisition of L2 pragmatics. In the case of DMs, it might be necessary to be attentive to longer stretches of speech and the way spoken discourse unfolds, owing to: the polysemy and multifunctionality of DMs (Beeching, 2016), the fact that certain pragmatic functions of DMs have been found to be less salient than others (Müller, 2005; Polat, 2011) and the fact that DMs encode procedural rather than conceptual meaning (Blakemore, 2002; Haselow, 2017), i.e. they function as instructions of how to interpret the message rather than embody a concept. Related to this was the finding that only considerable/moderate DM users reported an awareness of the general function of DMs (i.e. to structure speech and ensure the smooth flow of communication) (Section 5.4.3.8). Such awareness could have been instilled or reinforced by their noticing practices or vice versa.

Subsequent processing of input took different forms for different types of DM users. It appeared that broad and frequent DM use was related to input processing practices that were productive (e.g. embedding aspects of spoken discourse in one's own spoken productions) rather than simply receptive (e.g. looking up the meaning of lexical items). This is well substantiated by the notion that "efficiency in performing pragmatic functions" requires sustained practice besides exposure (Taguchi, 2015b:34). As this study showed, producing language through frequent and constant spoken interaction with L1/L2 others and speaking to oneself, imitating actors or journalists and repeating lines from movies or TV shows, were habits of considerable/moderate DM users.

Another finding which highlights the importance of input processing, through practice or usage of the language, is that the productive ISLL activities of speaking to oneself and interacting (by speaking) with L1/L2 others contributed to both DM range and most aspects of DM frequency (i.e. overall, textual, interpersonal), whereas the receptive activity of watching TV/films only contributed to DM frequency (i.e. overall and textual-interpersonal). This indicates that in order to produce a variety of DMs and to frequently produce textual markers and interpersonal markers, exposure to input might not be sufficient, but the learner can benefit further from activities that involve production and interaction. Being exposed to DMs in the input might promote the learner's overall frequency of DMs or frequency of markers that combine a textual and an interpersonal function, but it cannot guarantee that the learner will use different DM types if such exposure is not followed by production of the language in novel situations.

Noticing and processing input from informal sources might be of great importance to DM acquisition given the limited representation of pragmalinguistic features in the classroom input (Taguchi, 2015a), and the artificial type of classroom interaction owing to "the restricted and institutionalized roles of teacher and students" (González-Lloret, 2019:114). With no student mentioning having noticed DMs in their teacher's use of the language, but rather when the teacher explicitly instructed students to use certain DMs, it can be argued that noticing and processing spoken input might be encouraged more during ISLL because of the personally relevant, leisure-oriented nature of engagement with the language (Cole & Vanderplank, 2016), the significance of which is discussed below. The speculative nature of the arguments in Sections 6.3.1 and 6.3.2 flags up the need to know more about the nature of the input during out-of-class activities, which can be addressed by future research (Chapter 7).

6.3.3 Self-initiated, leisure oriented ISLL through technology and the internet

This study showed that it is not only feasible to maintain contact with the language outside the classroom in EFL contexts, but that such opportunities can reinforce pragmatic gains. This is revealing especially because EFL contexts have been equated with the classroom setting and, therefore, stigmatised for the poverty of input and limited opportunities for spoken production and communication, compared to other contexts (e.g. ESL, Study Abroad, English as a Medium of Instruction) (Romero-Trillo, 2002; Gilquin, 2016; Culpeper et al., 2018). Martín-Laguna's (2019:41) assertion reflects the widely held view that students in EFL contexts are in a disadvantageous position: "In foreign language settings, opportunities for contact with the language outside of the classroom are limited, and pragmatic development is closely interrelated to what happens in the classroom".

All key informal activities that contributed to broad and frequent DM use were not teacher-initiated nor language learning oriented and were not carried out inside institutional settings nor through language learning-oriented interventions, projects, websites and apps, as opposed to what has been the focus of mainstream (E)FL pragmatics research (e.g. Taguchi, 2015a, 2015b; Sykes, 2018). Instead, they were learner-initiated, motivated by personal interests, and carried out for leisure purposes, often through personalised use of technology. These findings show that EFL contexts should be conceptualised more broadly in L2 pragmatics research and not be limited to the classroom or the teacher if the reality of EFL learners is to be thoroughly understood.

At least two of the three activities which contributed to broader and more frequent DM use were carried out through technology and the internet (i.e. streaming TV/films without subtitles online or through the Netflix app; and engaging in synchronous, quasi-synchronous or a-synchronous online spoken interaction with L1/L2 others through apps such as FaceTime and WhatsApp). This corroborates previous findings in the sub-fields of ISLL, namely the Online Informal Learning of English (OILE, Sockett, 2014) and Informal Digital Learning of English (IDLE, Lee & Dressman, 2018) in that exposure to authentic L2 input and contact with L2 others through technology need not be orchestrated by a teacher to lead to linguistic gains (Sockett & Kusyk, 2015; Lee, 2019).

Since a big part of engagement in the key activities occurred through smartphone apps, present findings also reinforce the crucial role of mobile devices in language learning (Kukulska-Hulme, 2020). The findings accord with previous SLA literature that highlights the role of self-directed, personalised use of mobile technologies beyond the language classroom (Kukulska-Hulme & de los Arcos, 2011; Wrigglesworth & Harvor, 2018; Peng et al., 2021). However, this study diverges from previous research in that the activities associated with broad and frequent DM use were not carried out with the primary aim to support or extend one's language learning in the traditional sense (e.g. deliberate vocabulary practice) nor through apps that were specifically designed for language learning (e.g. Duolingo). Although research into Mobile Assisted Language Use (MALU, Jarvis & Krashen, 2014) and the use of smartphones for communication and exposure to authentic L2 material without the primary objective of language learning is still limited (Jarvis & Achilleos, 2013; Jurkovič, 2019), the present study contributes to such findings by demonstrating that leisure-oriented smartphone use can be positively related to pragmatic gains, something that had otherwise not been shown.

Speaking to oneself or interacting with others sometimes also took place without the use of the internet or apps (e.g. talking in front of the mirror, face-to-face interaction with L2 speaking friends). Nevertheless, the internet and apps sustained and enhanced the L2 speaking/interaction experience. For example, students who spoke to themselves, often imitated actors they had heard in online TV shows. Students who had face-to-face interactions in English with their friends at recess at school, further strengthened those interactions via voice-messages at home. And the student who used to wait for months for her friend's letter to arrive from the USA, was now able to interact with her in real-time on a daily basis through mobile apps. These findings are revealing especially when considered

in light of widely held views that (E)FL contexts are limited. Interactions with L2 speakers need not be regarded as a distant future possibility or endpoint of the language learning journey. Given that real-life, authentic L2 use and communication with L2 others is what learners, also of languages other than English (e.g. Graham et al., 2016), greatly value, such practices should be encouraged and further researched, especially since they were proven here to positively influence language outcomes.

The study of the effect of self-initiated, leisure-oriented use of technology in EFL contexts has been largely neglected in research into L2 pragmatics and spoken DM use. Instead, research has primarily focused either on (a) SL contexts, given the widely held belief that naturalistic exposure to and use of the language is more likely to occur in the physical space of the target language community or (b) teacher-initiated, technology-mediated FL contexts, such as websites and apps, given that pragmatic gains are believed to be fostered in technology-mediated environments which the teacher/researcher has created (Taguchi, 2015a; Culpeper et al., 2018).

As already argued in the literature review, the extent to which engagement in teacher-initiated activities resonates well with all students can be debated. Although the majority of activities in the present study were learner-initiated and performed only for leisure, the results showed that activities encouraged by the teacher or associated with homework (e.g. listening to a BBC podcast, watching TED talk videos on YouTube, doing speaking exercises from the textbook) not only did not align with all students' interests, some of whom consequently abandoned them, but also did not have any effect on their DM use. Such findings converge with ISLL research which emphasises the role of affective parameters (i.e. high motivation and low anxiety associated with leisure), rather than teacher influence, in language acquisition (Sockett, 2014; Cole & Vanderplank, 2016).

Without the teacher's influence and for reasons pertaining to leisure, considerable/moderate DM users had found opportunities for exposure to and use of the language throughout a five-month period in situations that were authentic and personally relevant, characteristics whose importance has been underscored for robust L2 pragmatic learning (Taguchi, 2015a). Even though teacher-chosen activities in the networked classroom or technology-mediated environments created by the teacher/researcher have been considered authentic in that they enable access to authentic input and L2 peers in the target country (Taguchi & Sykes, 2013; González-Lloret, 2019), the degree of personal relevance of those projects can be questioned. Indeed, some L2 pragmatics studies have

reported suboptimal student experiences, lack of project success or learners' frustration (e.g. Holden & Sykes, 2013; García-Gómez, 2020).

A possibility that should not be ruled out is that their contact with the researcher and participation in the present study might have rendered students more aware of their out-of-class habits hence influencing their ISLL and prompting them to take up activities they had not engaged in before. However, the fact that most individuals' engagement, especially in these three key activities, was reported from the first time-point and remained constant throughout the study is an indication that such activities were already common among those individuals. Even if there might have been a possible influence by mere participation in the study, ISLL was neither obligatory nor teacher guided, as in previous studies, but voluntary on the part of the learner.

In FL pragmatics there is only limited and tentative evidence regarding the positive effect of engagement in self-initiated, leisure-oriented, out-of-class activities on pragmatic gains (Vickov, 2015; Nightingale & Pla, 2018). The study builds on previous evidence by Vickov (2015) who reported positive correlations between written DM use and ISLL for Croatian EFL learners of ages similar to the present participants. This study adds to existing knowledge, as it demonstrated links between spoken DM use and ISLL, which are more conclusive than Vickov's (2015) findings, who only found links for lower-level (primary school) but not higher-level (secondary school) students. The activities studied in Vickov (2015) were different from the activities that stood out here. Even though Vickov (2015) found positive correlations between TV watching and written DM use, there was no indication as to whether there was use of subtitles and therefore clear links with the present study cannot be drawn, since TV/film watching with subtitles did not have a significant effect in spoken DM use in the current research. Furthermore, the present study showed that an activity which is simply receptive, such as the ones studied by Vickov, only contributed to spoken DM frequency, compared to productive activities which also had an effect on spoken DM range. The disparity in the results between the two studies might be explained by the possibility that different aspects of DM use in different registers (written in Vickov vs. spoken in this study) might be affected by engagement in different activities. This is a working hypothesis that could be tested in the future.

6.3.4 Intentional learning or incidental acquisition?

To conclude the discussion regarding the factor of ISLL and its contribution to DM use, one final finding was the blurred boundaries between incidental acquisition and intentional practices. Understanding what the learner can do to benefit from their ISLL in terms of DM use is crucial for pedagogical implications that will be discussed in Chapter 7. Two findings of the present study indicated that acquisition of DMs might have been incidental. Firstly, broad and frequent DM users who engaged in the three key activities claimed to have done so without the primary intention to learn, but for leisure. As Sockett and colleagues posit, when ISLL is motivated by leisure, any linguistic outcome is a "side-effect" of other activities (Toffoli, 2020:127), and hence "incidental" (Sockett, 2014:8).

A second finding which could suggest that students' DM acquisition might have been incidental is the following. Although students who attributed their DM learning/use to their ISLL mentioned noticing DMs in the input, they claimed that their DM use was a result of frequent exposure to spoken discourse in those sources, implying that they had picked them up. In other words, there was no indication in students' statements that they engaged in the activities in order to learn DMs nor that after seeing DMs in the input they purposefully and deliberately practised those particular items. Because students expressed an awareness of learning outcomes in terms of DM use, it can be argued that DM acquisition might have been "incidental explicit"; as defined by Rieder (2003:28), incidental explicit acquisition takes place "without learning intention" but encompasses a conscious process, i.e. awareness. In other words, the learner does not have the intention to learn but recognises that learning has taken place and is aware of the product of learning. Although Rieder (2003) coined that term particularly for vocabulary acquisition, this can be extended to L2 pragmatics, in general.

Besides the arguments for incidental DM acquisition, there was evidence to suggest that certain intentional learning practices did take place in relation to L2 speaking in general. Considerable/moderate DM users reported not only noticing aspects of spoken discourse in the input but also embedding those aspects (e.g. accent, lexical items, longer stretches of speech) consciously and intentionally in their own spoken productions. This finding is well substantiated by Vanderplank and Cole's research (Cole, 2015; Cole & Vanderplank, 2016; Vanderplank, 2019, 2020), who posit that in order for linguistic gains to occur and for input to become intake from informal L2 sources, there needs to be a focus on linguistic details and active use. In that sense, several of this study's considerable/moderate

DM users reportedly engaged in practices similar to Cole's (2015) Fully Autonomous Self-Instructed Learners with regard to L2 speaking.

To summarise, there was no report of deliberate DM learning during ISLL; students did not claim to explicitly target DMs through their intentional practices, as they did not mention intentionally learning DMs through ISLL nor purposefully embedding DMs in their discourse for explicit practice. However, it can be argued that DMs could have been included in the overall spoken input students reportedly processed during their active engagement with spoken language in ISLL. Thus, DMs may have been picked up during students' deliberate practice of other language elements, such as when students were processing spoken input during their ISLL.

The blurred boundaries between intentionality and incidentalness during ISLL is an issue which has been acknowledged in the field (Dressman, 2020; Kukulska-Hulme & Lee, 2020; Lai & Lyu, 2020). Such unclear distinction is believed to be because enjoyment of the activity per se (e.g. TV watching) might often intertwine with conscious attention to the language. Although participants engaged in the key activities without the intention to learn, it is likely that moments arose when students' focus shifted from communicating or enjoying the content of the activity (e.g. TV show) to spoken linguistic details and subsequently to the employment of intentional practices. In that case, it might be appropriate to view intentional learning and incidental acquisition during ISLL as a continuum, as Hubbard (2020:406) suggests, rather than as discrete categories.

Regardless of whether informal engagement with language that potentially included DMs was followed by more or less intentional practice, the present study argues that certain DMs might have been acquired or at least reinforced through engagement in the three key ISLL activities. This is plausible given that considerable/moderate DM users employed certain DM types which, as already discussed in Section 5.2.3, were rarely or never present in instructional settings.

The fact that a minority of students reported engaging in all three key out-of-school activities at each time-point, contrary to the majority of participants, for whom such engagement was rare, if not non-existent, explains most participants' more limited DM use. Furthermore, the overall stability in learner DM use over time is explained by the fact that engagement, or lack thereof, in the three key activities was constant; students either carried out those activities frequently throughout the study or did not.

6.4 Motivation

Unlike ISLL, which contributed to all aspects of DM use, motivation contributed to only two aspects. Although this indicates that, comparatively, motivation was a less important factor in and of itself, its effect on DM range and interpersonal DM frequency constitutes a critical finding, especially if considered in relation to the lack of studies of motivation in the field of L2 pragmatics in general (Taguchi & Roever, 2017) and DM use in particular. In taking a novel approach to researching learner motivation by incorporating two widely applied and closely aligned theoretical frameworks, i.e. Dörnyei's (2005) L2 Motivational Self-System (L2MSS) and the Self-Determination Theory (SDT, Ryan & Deci, 2000), the present study enabled a thorough understanding of DM users' Current L2 Self and Future L2 Self, their present-future self-discrepancy and the degree of internalisation of their perceived self-states.

6.4.1 The determining role of a Current L2 Self

The most important finding regarding motivation was the determining role of a Current L2 Self, rather than a Future L2 Self, on broader DM range and higher interpersonal DM frequency. This undoubtedly lends support to calls in the literature for a reconceptualization of Dörnyei's L2MSS and the incorporation of the components of "Current L2 Self" and "present-future self-discrepancy" which are missing from the original theoretical framework (Al-Hoorie, 2018; Smith et al., 2020). Previous research has looked into the effect of perceptions of a Current L2 Self on learner attitudes such as effort expenditure inside the class (Henry & Cliffordson, 2017; Smith et al., 2020), whereas little is known about how learners' Current L2 Self can influence their language use. The present study provides novel evidence adding to the field of L2 motivation as it showed that researching learners' Current L2 Self can shed light on language outcomes, such as DM use, further strengthening its decisive role in language learning. This sub-section explores further the important role of a Current L2 Self firstly by interpreting this finding in light of the factor of ISLL and, secondly, by examining its relation to previous findings and its contribution to existing knowledge.

The role of a Current L2 Self on DM use was evident with respect to L2 speaking. Considerable/moderate DM users engaged in speaking in English because it formed part of their identity (extrinsic integrated motivation), for the inherent satisfaction for being able to speak a language other than Greek (intrinsic-accomplishment), the inherent satisfaction that came from not being understood by L1 others when they spoke (intrinsic-superiority) or the inherent interest in using certain linguistic aspects of the language, i.e. lexical items or accent (intrinsic-linguistic stimulation). Because those DM users' Current L2 Self was motivated by highly internalised motives to speak, being a fluent L2 speaker was not a distant, future goal and was not associated with external demands or feelings of fear and embarrassment at present, as was the case for limited and non-DM users. Therefore, there was little present-future self-discrepancy.

These findings relating specifically to speaking can be interpreted in relation to students' ISLL, reinforcing previous studies in motivational SLA that have drawn links between motivation and ISLL (Henry & Cliffordson, 2017; Henry & Lamb, 2020). The study adds to previous knowledge as it provided novel empirical evidence of how ISLL and motivation are interconnected and can influence pragmatic performance, adding to Cole and Vanderplank's (2016) study, which showed how these factors influence other aspects of L2 acquisition (i.e. lexicogrammatical knowledge and production). Consistent and frequent exposure to spoken input, spoken production and interaction for leisure and for personally relevant purposes were an inextricable part of broader DM users' current reality, which might have been a cause or consequence of students developing an intrinsically motivated Current L2 Self, regarding L2 speaking. The finding that expressing extrinsic general motivation (i.e. without a degree of internalisation) contributed to lower interpersonal DM frequency is explained by this interpretation.

Changes over time in motivation for learning at present can also be interpreted in light of students' ISLL, given that an increase in intrinsic motivation and decrease in extrinsic external motivation was related more to ISLL than formal instruction. As the results of individual-level analysis showed (RQ5), engagement in the key informal activities, which contributed to broader and more frequent DM use, was accompanied by motivation which over time shifted from the extrinsic end of the SDT continuum towards the intrinsic end (and vice versa). In CDST terms, it can be suggested that engagement in the key ISLL activities and intrinsic motivation were factors that interacted, helping the system (i.e. DM use) to settle into a certain outcome: in this case, broad DM range. This reinforces previous research in the field of ISLL that has drawn links between ISLL and intrinsic motivation

(Sundqvist & Sylvén, 2016; Kusyk, 2020). It also aligns with studies that have found the reverse, namely that students' intrinsic motives for L2 learning weaken over time for reasons associated with formal instruction (Lamb, 2007; Busse & Walter, 2013). The study also adds to existing knowledge by showing that the interaction between those factors over time can influence pragmatic language use.

The present study also corroborates previous L2 pragmatics research which, through the operationalisation of the SDT framework, has documented a positive relationship between highly internalised motivation and pragmatic awareness (Takahashi, 2005; Tagashira et al., 2011; Yamato et al., 2013; Li et al., 2015). These claims are extended in this study to include a positive relationship between highly internalised motivation and pragmatic performance (spoken DM use).

The finding that a Current L2 Self might have played a more decisive role in spoken DM use than a Future L2 self stands in contrast with previous, albeit limited, findings in spoken DM research. In Ament's (2018) study, DM frequency correlated positively with participants' Ought-to L2 Self, i.e. a Future L2 Self driven by extrinsic external motives (e.g. societal demands). In the present study, not only was there no statistically significant effect of a Future L2 Self on any aspect of DM use, but interpersonal DM frequency was negatively related to motivation that was extrinsic. Different findings could be because measuring a Current L2 Self was not included in Ament (2018). Therefore, only part of the picture had been provided. By carrying out a more complete examination of learners' motivation, the present study adds to existing knowledge and with important implications, as it highlights the significance of internally motivated interaction with the language at present which can be encouraged through ISLL, as will be discussed in Chapter 7.

Lack of a statistically significant effect of a Future L2 Self on spoken DM use was because visualising an Ought-to L2 Self, an Ideal L2 Self or both was not a characteristic of a particular DM user sub-group. As students attending exam preparatory classes for the attainment of language certificates and as adolescents residing in Greece, participants were motivated by common future goals (e.g. obtaining the certificate, communicating with others during trips abroad) and those motivations were internally or externally regulated, irrespective of students' DM user profiles. Despite the lack of statistically significant results regarding the effect of a Future L2 Self on DM use, what appeared to differentiate DM users, as seen from qualitative findings, was that visualising an Ideal L2 Self, particularly with regard to speaking, was more of a characteristic of broader than more

limited DM users. This extends Ushioda's (2016) hypothesis which, although referring to DM awareness rather than DM production (as was the case in the present study), speculated on the effect of visualising an Ideal L2 Self as a fluent L2 speaker in pragmalinguistic acquisition. Notwithstanding the effect of an Ideal L2 Self, it must be noted that a Current L2 Self played a more important role in DM use, as shown in both statistical and qualitative analysis. This challenges previous assumptions and opens up the research agenda for the role of a Current L2 Self in pragmatic performance.

6.4.2 Perceived authenticity gap

Most participants' L2 Speaking Experience was characterised by a perceived authenticity gap between formal and informal settings and, perhaps not surprisingly, almost all participants claimed that their most enjoyable L2 speaking experience had occurred outside the class. These findings echo the position of Henry (2013) and Henry and Cliffordson (2017) that today's language learners experience a "dissonance" between the highly valued, personally relevant encounters with English outside the class and the strictly controlled, traditional in-class learning environment, which demands "a different type of social practice" (Henry & Cliffordson, 2017:718).

Scholars have also posited that perceptions regarding an authenticity gap might negatively impact students' motivation or effort investment inside the class (Henry, 2013). This has not been clearly proven by subsequent research (e.g. Henry & Cliffordson, 2017; Smith et al., 2020) nor was it evidenced in the present study. Instead, a different picture emerged. Despite the fact that perceptions of an authenticity gap were widespread among different types of DM users, considerable/moderate DM users retained highly internalised motivations to speak at present, regardless of the context (formal or informal). On the contrary, limited and non-DM users were either motivated by external motives or were negatively disposed towards speaking, regardless of context. In other words, the impact of perceptions of authenticity on motivation varied across the different DM users, as explained below.

Different informal L2 speaking experiences between the different DM user sub-groups might have been related to the way perceptions of authenticity impacted their motivation. More specifically, for considerable/moderate DM users, the inauthenticity of speaking in formal contexts may not have influenced negatively their motivation to speak at present

given those students' consistent and frequent authentic spoken language use for leisure outside the class. For limited and non-DM users, lack of frequent, out-of-class speaking experiences for leisure may have resulted in the perceived authenticity gap negatively impacting their motivation to speak at present or leading them to associate speaking at present with external demands (e.g. the need to speak in English at present because of others' expectations). Limited and non-DM users appeared to have idealised the unique, one-off events when they had socialised in the L2, while regarding frequent interactions of the same nature (i.e. out-of-class, only for leisure) as out of their control.

A disparity between learners' needs and what they think formal instruction equips them with is not only evident in EFL contexts, but also experienced by learners of languages other than English and of a similar age to the present participants (e.g. Graham et al., 2016), particularly in terms of using the language communicatively. This study has shown that engagement in L2 speaking/interaction during ISLL can mediate the possibly negative impact of perceptions of an authenticity gap in terms of L2 speaking and that the two contexts (formal, informal) can co-exist with the one supporting the other and with a positive effect on pragmatic performance. Implications for practice will be discussed in Chapter 7. Finally, the findings further strengthen the potential of ISLL, the study of which could also be relevant to other FL contexts (e.g. learners of French in the UK).

6.5. Formal instruction

Bringing together findings from RQ1a, RQ3 and RQ4, the present study showed that (a) aspects of formal instruction did not contribute to broader and more frequent DM use and (b) coupled with most students' lack of engagement in the three key out-of-class activities, the overall sample's more limited DM use could have been a reflection of overall restricted DM input inside the class.

When studied in isolation (RQ3), aspects of formal instruction (i.e. class-level, school and number of previous years of formal instruction) did not impact DM use. This is contrary to Ament et al.'s (2018) overall finding that more years of formal instruction and higher class-level were positively related to broader DM range and higher DM frequency, suggesting that frequent and broad DM use was a result of increased input exposure inside the class. It must be noted, however, that Ament et al.'s (2018) study was carried out in an

EMI setting, a language immersion context where DM input might be richer and exposure more frequent and intensive than inside the EFL classroom.

A split picture emerged in the present study as to whether formal instruction, and in particular class-level attended, impacted textual DM frequency. When examined in relation to all other individual and contextual factors in the present study (i.e. proficiency, motivation, ISLL) (RQ4), class-level (together with frequent, out-of-class, leisure-oriented speaking/ interacting) contributed to frequency of textual markers, with students in higher-level classes being more likely to employ a larger number of textual DMs than students in lower-level classes. This finding could be because, as qualitative results showed (RQ1a), textual markers were employed with higher frequency in teachers' discourse and in instructional material in higher-level than lower-level classes, suggesting that exposure to in-class DM input might be beneficial for the acquisition of textual DM frequency. This partly echoes Ament et al.'s (2018) finding that increased exposure to DM input and duration of study positively impacted the frequency of textual markers, in particular. Lack of any effect of formal instruction on the remaining aspects of DM use (DM range, overall DM frequency, interpersonal DM frequency) further highlights the determining role of ISLL.

A possible interpretation of lack of any effect of formal instruction on most aspects of DM use is that simply being exposed to richer DM input inside the class might not be sufficient to employ DMs. None of the students who attributed their DM learning/use to their formal instruction mentioned noticing DMs in teacher discourse but rather in teachers' explicit explanations. Although this could suggest that explicit instruction (rather than simply input exposure) might be necessary, there are a number of factors that mitigate the effectiveness of relying on explicit instruction for acquiring DMs. Firstly, it is not guaranteed that all teachers will explicitly teach a broad range of markers but might focus on a restricted number of more appropriate uses (e.g. *so*, *well*), as appeared to be the case in the present study and as previous research has suggested (Buysse, 2012; Diskin, 2017; Davydova, 2020). Even research that has examined the effect of explicit instruction in DM use reports attrition over time and the desire of students to practise DMs in real-world interaction in the target language community rather than inside the class (Romero-Trillo, 2012; Jones & Carter, 2014). This attitude is also reflected in present participants' perceived authenticity gap between speaking in formal and informal contexts. In terms of L2 pragmatics in general, it has been posited that attaining pragmatic competence requires sustained exposure and practice and cannot simply benefit from explicit instruction (Taguchi,

2015b:34). It is therefore revealing that such sustained exposure and practice was what considerable/moderate DM users had achieved outside the class, undoubtedly compensating for the limits of the classroom.

6.6. Spoken proficiency

The only aspect of DM use that increased with higher spoken proficiency (based on the IELTS speaking assessment criteria of fluency and coherence, lexical resource, grammatical range and accuracy, and pronunciation) was interpersonal DM frequency. There is no clear evidence in the literature that supports this finding. Although Wei (2011) also reported that advanced learners employed more interpersonal markers than intermediate learners, Ament et al. (2018) found no relationship between proficiency and interpersonal DM frequency. However, the methodological vigour of the present study contrary to previous research (i.e. employment of more appropriate and robust statistical models, four time-point examination of the same learners) strengthens the finding that use of markers to signal interpersonal functions is a characteristic of more proficient learners. Given that higher proficiency was related to interpersonal DM frequency (rather than textual or textual-interpersonal), there appears to be an order of acquisition: a learner might first acquire features to structure one's own speech (i.e. textual markers) but only at a later, more proficient stage acquire features to involve and address the hearer (i.e. interpersonal markers).

Despite the findings for interpersonal DM frequency, employing a broader range and larger number of DMs overall did not necessarily indicate higher spoken proficiency, as evidenced from both quantitative analysis of students' scores in the speaking activities with the researcher and qualitative analysis of the comments of assessors who provided the scores. This finding contradicts DM research which has positively associated higher proficiency with frequent and/or broad DM use (Hellermann & Vergun, 2007; Wei, 2011; Neary-Sundquist, 2014; Ament et al., 2018). However, as discussed in the literature review, widely accepted assertations of a positive relationship between proficiency and DM use should be treated with caution due to the methodological limitations of previous research.

Not all considerable/moderate DM users were regarded as more proficient by the two assessors, nor was higher proficiency necessarily accompanied by DM use, contrary to previous research (Beeching, 2015). Higher proficiency was not a prerequisite for embedding the DMs under examination in spoken production, but instead, exposure to spoken input outside the class and engagement in frequent, leisure-oriented spoken production and communication played a more decisive role. This corroborates the findings of studies which, along with proficiency, examined exposure to naturalistic input and/or spoken interactions outside the class and revealed that the latter are stronger predictors of learner DM use (Diskin, 2017; Jakupčević, 2019) and other aspects of L2 pragmatics (Matsumura, 2003; Bardovi-Harlig & Bastos, 2011). Particularly relevant to this finding is Roever et al.'s (2014) position that the effect of language proficiency should not be overextended to all aspects of L2 pragmatics. Other factors (in this case, ISLL) might be of greater importance to L2 pragmatics and, as this study showed, DM use, in particular.

There is another possible explanation why frequent and broad DM use did not indicate higher spoken proficiency. As has been posited, discourse with broad DM range and high DM frequency can seem more natural than discourse lacking DMs (Vickov & Jakupčević, 2020). However, freer communication might have caused this study's considerable/moderate DM users to let their guard down and become less attentive to correct grammar or pronunciation, leading to lower scores. Furthermore, previous research has shown that DMs such as the ones studied here might be employed when disfluency phenomena (pauses, repetitions) occur in spontaneous speech (Crible, 2017b; Buysse, 2019). Although disfluencies are inherent to L1 communication (Bosker et al., 2014), and have been considered a sign of authentic learner spoken production (Burton, 2020), they might attract negative scoring, given that they are more likely to be stigmatised in L2 than L1 speech (Gilquin, 2008)[44]. This interpretation is verified by the finding that assessors appeared stricter with "chatty" candidates or discourse they perceived as "more relaxed", as it appeared more susceptible to errors or disfluencies.

At the same time, the language of highly proficient students, but limited DM users, might have adhered to exam standards, complied with the four assessment criteria and included only those DMs likely to be encountered and accepted in formal settings (*so*, *well*).

[44] Although a detailed functional analysis was carried out as a step in DM coding, quantitative analysis as to whether a larger number of dysfluent tokens was present in broader than more limited DM users was outside the scope of this study.

However, such discourse might not necessarily have represented more natural, authentic conversation.

6.7 Age and gender

Age and gender have mainly been studied in relation to L1 rather than learner discourse. They were included in the present analysis to control for their effect. Although all participants belonged to the adolescent age group, findings suggested that overall DM frequency and frequency of textual markers was higher in the discourse of younger than older adolescents. This is partly in line with previous research in L1 DM use, whereby younger speakers have been found to employ markers at a higher frequency than older ones (Müller, 2005; Nestor et al., 2012; Laserna et al., 2014). There has not been clear evidence with regard to age and learner DM frequency (Müller, 2005). Finally, although previous research has documented differences in learner DM use depending on gender, with females employing DMs in a higher frequency than males (Bu, 2013; Tavakoli & Karimnia, 2017), there was no effect of gender in DM use in the present study.

6.8 Other factors

At this point, it should be acknowledged that other factors, which were not addressed presently, might have played a role in learners' DM use. For example, it could be hypothesised that broader DM users, who engaged in frequent spoken interactions with others in English and frequently watched non-subtitled TV, might have had higher L2 listening proficiency than more limited DM users. Listening proficiency might have acted as a confounding variable, influencing students' ISLL repertoire (e.g. their choice to watch non-subtitled rather than subtitled TV), the extent to which they paid attention to and subsequently processed the input (e.g. because they understood it better), or their motivation to engage with English. In other words, students who picked up DMs might have been better L2 listeners, which could be a cause or result of their ISLL and/or might have affected their motivation to engage with the language in this way. Although this study did not measure learners' listening proficiency, its interplay with ISLL and motivation, nor its role in learners' DM use, the contribution of listening proficiency to DM use is likely and can be addressed by future research.

Other factors that could have influenced learners' ISLL and motivation and, in turn, their spoken DM use are learners' family background and socio-economic status. Although all student-participants reported owning and using a smartphone and had access to the internet as they engaged in several online ISLL activities, the amount of time or the activities they were allowed to engage in through these sources in English might have been controlled by their parents. Attitudes towards learning English or learners' views regarding their Current and Future L2 Self might also have been shaped my family expectations. As will be discussed in Chapter 7, future research could gather data on these factors.

6.9 Summary

The discussion revealed that the study built on previous research to contribute novel findings and enhance our understanding of learner spoken DM use. Overall, the findings showed that learners made limited to moderate DM use, confirming the general tendency in the literature that learners have relatively limited DM repertoire when they speak (e.g. Buysse, 2011; Gilquin, 2016). Previous research has suggested that restricted DM use might be due to the nature of EFL contexts and learners' limited opportunities for exposure to and use of the language (Müller, 2005; Gilquin, 2016; Ament et al., 2018), coupled with the limits of formal instruction (Buysse, 2017; Romero-Trillo, 2020). Indeed, the present study showed that limited-to-moderate DM use over time could reflect the exam-centred nature of formal instruction, a characteristic of EFL education in Greece (Dendrinos et al., 2013); analysis of DM content of teacher talk and instructional material showed that DM input was restricted in formal educational settings. Despite the limits of formal instruction, some EFL students made broad and frequent DM use. Previous research posits that frequent and broad DM use is related to high spoken proficiency (e.g. Neary-Sundquist, 2014), increased exposure to input in formal instruction (e.g. Ament et al., 2018), or has shown some effect of age (e.g. Müller, 2005) and gender (e.g. Bu, 2013). These factors had little to no effect on aspects of DM use presently, a finding that challenges previous knowledge regarding DM acquisition. Instead, the most important factor that contributed to broader DM range and higher DM frequency was frequent, leisure-oriented, and self-initiated ISLL. Despite previous tentative evidence with regard to written DM use (Vickov, 2015), ISLL has not been examined in spoken DM use in EFL contexts, as the latter have been conceptualised in a limited way in L2 pragmatics. The present findings not only

challenge previous assertations in DM research about the nature of EFL contexts but also show that broad and frequent DM use can be achieved through frequent engagement in certain activities: speaking to oneself, interacting by speaking with L1/L2 others and watching TV/films without subtitles/captions. Finally, highly internalised motivation to learn and speak at present also impacted DM use positively. Although scholars have hypothesised or provided empirical evidence for the positive impact of a Future L2 Self (Ushioda, 2016; Ament, 2018), the present study has challenged previous assertions as it underscored the importance of a Current L2 Self rather than Future L2 Self on spoken DM use. Drawing on those findings, the following chapter details the study's contributions to existing knowledge about EFL learners' spoken DM use, suggests implications to policy, pedagogy, and practice, and outlines the study's limitations while pointing to areas for future research.

Chapter 7. Conclusion

This chapter discusses the contributions of the present study (7.1) and its implications for policy, pedagogy and practice (7.2), acknowledges its limitations while proposing suggestions for future research (7.3) and finally presents its concluding remarks (7.4).

7.1 Contributions

The overall contribution of this thesis is that it has provided novel evidence that explains how DMs are acquired in EFL contexts. Previous research has offered inconclusive evidence and has highlighted the limitations of EFL contexts regarding pragmatic input exposure and language use. By introducing the importance of learner-initiated, out-of-class engagement with English (Informal Second Language Learning, ISLL), this thesis challenges previous assertions and shows that broad and frequent spoken DM use can be achieved in that setting. This is encouraging as it strengthens the potential of the EFL context to promote pragmalinguistic outcomes independently of classroom practices. More specifically, bringing together research areas which, to the best of the author's knowledge, have not been studied before in tandem, the study made important methodological and empirical contributions to three fields: L2 pragmatics, ISLL, and motivation. These are discussed below.

7.1.1 L2 pragmatics

In terms of the field of L2 pragmatics, this study made the important methodological contribution of confirming the effectiveness of tracking spoken DM use by utilising appropriate CDST methodology (Hiver & Al-Hoorie, 2020) both for quantitative analysis (Generalized Linear Mixed-effects Modelling: RQ2, RQ3, RQ4) and qualitative analysis (RQ5). By resorting to more traditional but perhaps not entirely suitable methods of longitudinal analysis (Lowie, 2017), previous DM research has provided limited evidence regarding different factors and their interplay with DM use over time while other factors have only appeared as post-hoc interpretations of findings (Taguchi & Roever, 2017). This has resulted in mixed findings and lack of a clear picture regarding influences on learner DM use.

The use of CDST methodology presently enabled the investigation of several factors over time, i.e. spoken proficiency, aspects of formal instruction, ISLL and motivation, as well as their effect on DM use (controlling for age and gender) at group and individual level. From this in-depth examination, which appears to be the first of its kind in longitudinal spoken DM research, the factor of ISLL, which has been largely neglected in research into L2 pragmatics in EFL contexts, emerged as the most important contributor to broad and frequent DM use. Factors which were previously linked to higher DM frequency and/or broader DM range, such as proficiency (Wei, 2011; Neary-Sundquist, 2014) and formal instruction (Ament et al., 2019), were found to have little or no positive effect on aspects of DM use. With the introduction of CDST methodology in DM research, the present study therefore challenged existing assumptions and contributed to knowledge regarding factors that encourage DM use.

Against this backdrop, the study offered a broader conceptualisation of EFL contexts, which scholars in L2 pragmatics and DM research have investigated only partially: studies have focused on how EFL contexts are limited compared to ESL contexts (in terms of pragmatic input exposure and language use) unless mediated by the technology savvy teacher. Despite the language classroom having been the main focus of enquiry in previous DM research, it does not constitute presently "the main access to the target language" (Gilquin, 2016:219) or "the only context where [students] acquire the Foreign Language" (Romero-Trillo, 2002:779). By highlighting the role of ISLL in DM acquisition, the present study challenges previous assumptions and argues that EFL learners might not be at disadvantage in terms of their pragmatic performance if certain ISLL activities are carried out (discussed in 7.1.2). This finding has important implications for practice because it establishes new directions for EFL learners who should not feel restricted by classroom practices, be dependent on the teacher or feel the need to travel/study abroad to benefit pragmalinguistically. The finding also opens up the agenda of L2 pragmatics research, which should not neglect this factor if it is to reach a more complete understanding of the multifaceted reality of the EFL learner and their pragmatic performance.

Through CDST methodology, this study also showed that stability has a place in a trajectory of pragmalinguistic performance, in particular, DM use. However, it is necessary to evaluate the kind of stability that is desirable or disadvantageous. The study provided insight regarding this underexplored issue by showing that constantly more limited DM

use reflected the restrictions of the EFL classroom and exam-centred curriculum, whereas constantly broader and more frequent DM use was related to personally relevant out-of-class activities that compensated for the limited DM exposure and alleged lack of authentic spoken production and interaction inside the class. These findings also point to the limitations of Greek EFL education, since an examination of DM use in all three agents (learners, teachers, material) further revealed its exam-centredness. By doing so, much-needed evidence was provided regarding the potentially restricting effect of the Greek EFL classroom with implications for pedagogy (Section 7.2.2).

7.1.2 ISLL

Regarding contributions to the field of ISLL, the study underscored the important role of the informal context as a source for gains regarding spoken pragmalinguistic performance, an area of research that has received little if any attention in ISLL research. More importantly, participants' ISLL was not examined in isolation from the reality of the classroom, contrary to common ISLL research practices. This methodological consideration helped reveal that for learners who are agents in both formal and informal contexts, there might be carryover of pragmalinguistic gains, motivation and perceptions (e.g. about authenticity) from one context to the other.

By neglecting to account for the possible influence of the formal instructional context, most previous ISLL research has offered only one side of the picture. As a result, it has not always been possible to confirm whether linguistic gains stem from ISLL or whether it is already more proficient students who seek further engagement with the language outside the class (e.g. Sundqvist & Wikström, 2015). The present study does not make claims for causality due to its non-experimental design and also because CDST research is not concerned with identifying one factor as the unique cause of a certain phenomenon (Sockett & Kusyk, 2015). However, by taking into consideration both contexts, the study provided novel evidence that constantly broader and more frequent DM use was reinforced outside rather than inside the class and that use of certain DM types (e.g. *like*, *so yeah*, *and stuff, kinda*) were acquired in informal settings. This further strengthens the potential of the ISLL field and opens up new avenues for research (Section 7.3).

The study further contributes to knowledge by indicating three specific activities that when performed frequently and for leisure likely reinforced DM use: speaking to oneself,

interacting by speaking with L1/L2 others and watching TV/films without subtitles/captions. This has important implications for understanding the effect of ISLL on DM acquisition, namely that it is not simply the frequency of any ISLL activity, but rather the frequency of specific activities that can promote DM use. Although previous research had shown the importance of certain activities in vocabulary knowledge (e.g. Peters, 2018) and written accuracy (e.g. Kusyk, 2020), this study has provided further evidence by identifying specific activities that can promote pragmalinguistic use. This in turn has implications for practice, as students can be encouraged to take up specific activities to boost their DM frequency and range (Section 7.2.2).

Although ISLL that contributed to DM use was motivated by leisure purposes and was not language learning oriented, there is evidence to suggest the importance of intentional practices that involved active noticing and subsequent processing of spoken input outside the class. With these findings, the present study further contributes to the field by offering some insight into one of the most hotly contested issues in ISLL literature: the explicit-implicit debate (Dressman, 2020). This study supports the position which views intentional learning and incidental acquisition during ISLL as a continuum, supporting Hubbard's (2020) view, but argues that explicit attention to spoken language and active use are critical, supporting Vanderplank and Cole's work (Cole, 2015; Cole & Vanderplank, 2016; Vanderplank, 2020). Although previous research had focused on lexico-grammatical knowledge, this study adds to the literature by showing that intentional practices during ISLL are also especially crucial for pragmatic performance. This has implications for practice, such as encouraging learners to develop strategies in order to benefit pragmalinguistically during their ISLL (Section 7.2.2).

7.1.3 L2 motivation

A further novel contribution concerns the field of L2 motivation. Combining two theoretical frameworks (L2MSS and SDT) was an innovative methodological application and resulted in a more comprehensive theoretical base to examine learner motivation, overcoming potential limitations of drawing on either theory alone, as argued in Section 3.4.3. The present approach enabled a better understanding of the motivation of different types of DM users, and, more specifically, both their present-future discrepancy (a concept which is missing from SDT), as well as the degree of internalisation of motivated engagement with the language at present (a concept which is missing from L2MSS). This

contributed to knowledge regarding the role of motivation in DM use of which little is known (e.g. Ament, 2018) as this area is still on the fringes of DM research.

More specifically, combining both theoretical frameworks enabled the examination of different degrees of internalisation of motivation describing a Current L2 Self. It was then found that a Current L2 Self, as shaped by the L2 learning experience, plays a more important role in spoken DM use than a Future L2 Self, as formerly assumed (Ushioda, 2016; Ament, 2018); this is because it was highly internalised motivation to speak at present, rather than learners' views of themselves as future speakers of the language, that differentiated broader from more limited DM users. Additionally, little present-future self-discrepancy with regard to L2 speaking was a characteristic of broader DM users. Previous research has proposed the incorporation of a Current L2 Self in the L2MSS theoretical framework (Thorsen et al., 2017; Al-Hoorie, 2018; Smith et al., 2020); however, scholars have not concerned themselves with researching learners' Current L2 Self and present-future self-discrepancy to understand learners' language use or gains. The present study not only reinforces previous proposals but also contributes to knowledge by showing the relevance of studying learners' Current L2 Self and present-future self-discrepancy to understand their DM use. This opens up the agenda for future studies. Furthermore, if it is acknowledged that successful use of the language need not be a distant goal for EFL learners, many of whom are present users of the language outside the class, certain attitudes can be encouraged to boost motivation to use the language presently and consequently enable pragmatic gains.

Implications of the contributions across these three fields for pedagogy and practice are further discussed in Section 7.2.2.

7.1.4 DM user profiles

A final, original contribution of this study is the discovery of two typical DM user profiles: a typical broader DM user and a typical more limited DM user. These profiles emerged from the findings after bringing together all factors under examination and due to overall stability in DM use over time. On the one hand, a typical broader DM user is frequently exposed to authentic spoken input outside the class, produces spoken language either on their own or through spoken interactions with others, actively notices and processes spoken input from informal sources and is positively and internally motivated to speak at present.

On the other hand, a typical more limited DM user rarely produces spoken language outside the class for leisure, spoken interactions with others for leisure are infrequent and considered beyond the person's control, exposure to spoken input does not encompass subsequent productive processing and the individual is not internally motivated to speak at present. As becomes evident, these two DM user profiles are not distinguished by proficiency level or formal instruction attended. Previous DM research has focused on how learners' DM use differs from a target L1 norm or has compared DM users of different L1s (Buysse, 2017), proficiency levels (Neary-Sundquist, 2014) or learning contexts (e.g. full-EMI vs. semi-EMI in Ament et al., 2018). This study contributes to existing knowledge by showing that differences in DM use can also exist between learners of the same L1, proficiency levels and learning context, therefore pointing to factors (ISLL, motivation) that can provide further insight into differences in DM use. The identification of these two DM user profiles also has implications for pedagogy, as will be discussed in the following section.

7.2 Implications

This section suggests implications for educational policy, pedagogy and practice in EFL contexts where formal instruction is likely to be exam-oriented.

7.2.1 Educational policy

The study showed that only a small number of students had high DM frequency and broad DM range, whereas the majority of students made more limited DM use. An important issue thus concerns whether broader and more frequent DM use has a place in the exam-centred EFL classroom. It might not always be in the capacity or responsibility of each individual teacher to decide upon such an issue. Rather, this should be addressed by an open dialogue between teachers, researchers, material developers and, most importantly, examination boards. Those agents, together with educational policy makers, need to discuss the type of spoken language adolescent EFL learners should be exposed to, expected to produce and assessed for in formal EFL contexts. There are several questions to be answered: Should formal instructional settings continue accepting and promoting language which is more "proper" and is used in a uniform way by students (as evident from the language use of present participants who mainly relied on the DMs *so* and *well*)?

Or should the formal context (also) encourage language which is authentic and perhaps more natural-seeming, but which might include features, such as DM types, that have been perceived as less proper (e.g. *like*, *you know*, *and stuff*, *kinda*)? Moreover, should instructional material be developed that includes a higher frequency, wider range of DMs and a more balanced representation of DM functions? How urgent or necessary are these changes if students can pick up such language during informal, out-of-class L2 exposure and use in authentic L2 sources, as this study suggested? Last but not least, given the ingrained mania in the Greek EFL context for foreign language certification, will these changes, if implemented, really result in pragmatic performance which reflects more that of a language user than a traditional language learner or exam candidate?

7.2.2 Pedagogy and practice

Until a constructive debate occurs and answers to the abovementioned questions are provided, it is realistic to expect that the formal context will continue being separate from the informal context in terms of DM exposure and use, and the nature of spoken interactions. This study suggests that the role of the teacher be not that of instructing broader DM range and more frequent DM use, contrary to previous authoritative suggestions (e.g. Li, 2015). This is because the study showed that ISLL, rather than aspects of formal instruction, played a more important role in learner DM use. There are further reasons to support this position. Especially in an exam-centred curriculum, as the one here, explicit instruction of "subtleties" such as DMs (or pragmatic devices in general) is probably not the primary aim of a teacher whose more immediate concern might be to cover areas that are considered more urgent for the upcoming exams, such as grammar and vocabulary (Buysse, 2011:25). Given that frequent and broad DM use was not a prerequisite for a student to be regarded as proficient, their inclusion in the curriculum may justifiably be avoided. In addition to that, instructing broader DM use may mean changing the content of the curriculum or the expectations for exam performance, changes which, as discussed before, are not in the realm of the individual teacher.

Therefore, with regard to pedagogy, the main implication of the present study is that the role of the teacher should move beyond explicit instruction of pragmalinguistic items towards incentivising the kinds of ISLL that can in turn reinforce gains in pragmatic performance. This can be achieved through experience sharing inside the class, strategy instruction and attitude building.

In terms of experience sharing, teachers can identify the two different DM user profiles that emerged from the present findings (i.e. typical broader and typical more limited DM user) and encourage broader DM users to share details of their out-of-class habits with more limited DM users, with a focus on those key activities that promote DM use, such as outlets for accessing L2 others. Teachers can create semi-formal spaces such as virtual or real common rooms in order to promote discussions between the different DM user types. Given that adolescents are more susceptible to peer suggestions and because activities which contributed to DM use were personally relevant and self-initiated rather than imposed by a teacher, the teacher's role is delicate; it should be one of guidance and dialogue building rather than interference. In terms of promoting broader DM use, the present study therefore questions previous suggestions of bringing out-of-class contexts into the classroom, where, for example, students take part in activities or projects which although based on real-life resources (e.g. TV series) are still teacher-initiated and teacher-led (e.g. Sockett & Toffoli, 2020; Peng et al., 2021).

Apart from appropriately catering for limited DM users' needs, the recognition of DM user profiles in a classroom might also aid the teacher to encourage broader DM users but less proficient students to focus on attending to other aspects of the language as well, such as grammar and vocabulary. Thereby, students can ensure that more natural spoken production does not hinder accuracy. It must be noted that because the different DM user types were not distinguished by their spoken proficiency but by subtler characteristics (ISLL activities, motivation), their existence might not be apparent to the teacher. A teacher can identify these profiles by becoming informed about students' ISLL and motivation to speak at present through questionnaires or informal discussions. Teachers can include informal discussions about their students' ISLL in their lessons without overloading the syllabus. For example, these discussions can be part of a lesson that focuses on "hobbies" or "leisure time", subjects that often already form part of exam preparation. Students will be sharing their views about ISLL while practising their language skills and preparing for their exams (e.g. through speaking or writing tasks, such as writing an informal email to a friend describing one's out-of-class engagement with English).

The study makes clear that the EFL classroom is not the sole nor optimal source of DM input. Therefore, students should be empowered to exert choice and control to discover spoken language for themselves outside the class so as to benefit from informal sources

pragmalinguistically. This could be accomplished through strategy instruction or showcasing practices of broader DM users. Strategy instruction has been underscored by scholars as it can increase adolescent FL learners' language outcomes (e.g. Graham & Macaro, 2008) and their beliefs in their ability to engage with the language successfully in FL contexts (i.e. self-efficacy, e.g. Graham et al., 2020). Bearing in mind the already overloaded curriculum in order to meet the requirements of exam preparation as well as possible time constraints, strategy instruction regarding ISLL can be embedded in a normal or standard school curriculum as part of exam-preparation lessons that already focus on listening or speaking practice. This can be in the form of feedback given to students carrying out a listening task inside the class. For example, teachers can make students aware of ways to attend to longer stretches of speech and encourage students to transfer these strategies outside the class, such as when watching a movie. As the findings showed that explicit attention to and use of language outside the class are critical, teachers can, for example, highlight the benefits of frequent processing of spoken input outside the class and ask broader DM users to demonstrate certain practices to more limited DM users, such as paying attention to longer stretches of speech and repeating lines from their favourite TV shows. It should also be acknowledged that some students might be unable to access technology or not have a safe home environment to do so there; schools could provide spaces where those students can access resources on their own accord.

The final recommendations concern attitude building. Because this study underscored the importance of a Current L2 Self as opposed to a Future L2 Self, teachers should ensure through careful phrasing of their instructions and discussions with their students that the latter do not associate DM use and L2 speaking merely with an externally imposed, future academic event (i.e. exams) or other future objectives (e.g. CV) but with real-life, everyday communication. This will enable more students to develop more internalised motivation to speak at present and lower their present-future self-discrepancy whereby their view of themselves as a fluent L2 speaker is not a distant vision but forms part of their Current L2 Self.

7.3 Limitations and future research

This section acknowledges the study's limitations and suggests avenues for future research. With regard to researching DM use, the following issues must be voiced. One important issue concerns the focus on ten specific DM types. Although overall limited DM

use of Greek EFL students was one of the main findings, a different picture might have been drawn if other markers had been studied. However, as explained in Section 4.6.1.2, owing to the controversy surrounding the items that make up the category of DMs, it was considered optimal practice to select markers that are among the most widely researched in learner and L1 spoken DM use, and to limit their number for an in-depth examination to address RQ1 and RQ1a. Therefore, the use of these certain DMs, or lack thereof, was considered to offer an informed picture, representative of learners' spoken language. Nevertheless, future research can increase the number of items under examination to include a wider DM repertoire.

Another consideration is the instrument for collecting student DM data, as it might have affected the DM range, overall DM frequency and frequency of functional categories employed (Liao, 2009; Gablasova et al., 2017; Jakupčević, 2019). For several reasons explained in Section 4.5.1.1, the designed speaking activities were considered appropriate for eliciting learner DM data (as also validated during piloting). However, different instruments, such as a sociolinguistic interview, dyadic tasks, more artificial tasks (e.g. role plays) or elicitation of authentic spoken data during informal, out-of-school interactions, might have resulted in different DM data. Nonetheless, the main purpose was to record language as used inside formal instructional settings, in order to contextualise the phenomenon under examination and understand its impact given that the study took place inside language schools and all learner-participants were EFL students. Collecting data from each participant separately was preferred to collecting data from pairs or larger groups, as this maximised the accuracy of transcription, analysis, and assessment, providing a clear picture of each participant's development over time. Although not among the aims of the present study, further research can investigate whether DM use differed depending on parts of the speaking activities; that is, whether tasks similar to those used in language certification exams (i.e. picture description and comparison) were more likely to elicit fewer DM types and tokens than tasks which were less artificial (e.g. personal questions) or perhaps more engaging to adolescents (i.e. video description).

This study did not include a detailed individual functional analysis (i.e. individual functions assigned to tokens for each DM type). Although such analysis was carried out at the DM coding stage (Appendix C3) as a preliminary step before assigning the broad functional categories (textual, interpersonal, textual-interpersonal), it did not form part of subsequent quantitative and qualitative analysis, given that the focus was only on broader aspects of DM use (i.e. frequency, range, functional categories) and how they were

affected by different individual and contextual factors (i.e. spoken proficiency, formal instruction, ISLL, motivation). Not incorporating the use of individual DM functions in subsequent quantitative and qualitative analysis leaves several questions unanswered regarding the "quality" of DM use, such as whether DMs were used appropriately (i.e. target-like or not), whether different DM user sub-groups employed a wider range of individual functions than others, or whether DM use was more connected to fluency or disfluency in the speech of different types of DM users. Although this was outside the scope of the present study, future research is needed to assess the quality characteristics of DM use by broader DM users as opposed to more limited DM users, as well as whether and how those are impacted by individual and contextual factors. This will provide a more complete understanding of different DM user profiles. It will also shed light to the assessment of the speaking skill and the extent to which different uses of DMs, i.e. connected to fluency or disfluency, attract higher or lower scores.

Another important limitation is the self-reported and retrospective nature of data regarding the factor of ISLL which raises issues of reliability and does not allow for assertations regarding the exact frequency of ISLL or whether and what psycholinguistic processes took place during ISLL. Because out-of-class behaviour was not observed in real time, issues such as the degree of intentionality to practise the language during ISLL or assertations about noticing DMs in out-of-class L2 input and processing spoken input could not be proven. Nevertheless, because of the personal nature of ISLL, data were considered trustworthy depictions of personal experiences which were valued by each individual (Kashiwa & Benson, 2018). Findings were further substantiated by the longitudinal design of the research and the fact that similar statements were voiced at more than one time-points without students always being asked directly.

Although the main contributor to DM use was engagement in key out-of-class activities, the study did not capture data regarding the DM input participants were exposed to nor their DM use while engaging in those activities; instead, possible exposure to and use of DMs outside the class was speculated based on previous research evidence about the presence of DMs in English media as well as data at the final time-point regarding student attributions for DM learning/use. It is crucial for future research to examine not only DM exposure and use in real time during ISLL but also students' practices when exposed to spoken input. For example, creating various sub-corpora of oral data from participants' favourite TV series, interactions with their friends or voice-recordings of speaking to themselves (provided that they are willing to share personal oral exchanges) will enable the

analysis of DM data from participants' out-of-class activities. Research that takes place "into the wild" might provide more definite answers regarding language acquisition during ISLL and the implicit-explicit debate. The present study has undoubtedly served as a base for future studies in this area. Potential challenges to be overcome by future research concern data collection and ethical considerations given the private and highly individualised nature of online or offline ISLL of underage participants.

Although the current study looked into teachers' DM use during a lesson, future research can also record students' DM use inside the class and contrast it with their DM use outside the class in order to reach firmer conclusions regarding the nature of interactions in formal and informal settings. Researching learner DM use during a lesson could also indicate whether some students make considerable DM use inside the class therefore constituting possible DM input for more limited DM users.

The statistical procedure of Generalized Linear Mixed-effects modelling was considered the most appropriate quantitative method to answer RQ2, RQ3 and RQ4. However, similar to other quantitative methods used in research that draws on the CDST framework, it has not been widely employed in longitudinal SLA (Lowie, 2017). Therefore, its limitations have not been adequately tested in the field, especially since, contrary to more mainstream statistical procedures, GLMMs remain challenging tools (Nakagawa, 2017; Harrison et al., 2018). Additionally, formulas to calculate important measures, such as R^2 (i.e. the variance explained by the model), have only recently been developed for different types of GLMMs (Nakagawa et al., 2017; Jaeger et al., 2017). Yet such measures have not been incorporated into all statistical software packages such as the one used presently (IBM, 2020). More importantly, there is lack of consensus regarding a widely accepted formula to calculate R^2 in GLMMs when the study has a repeated measures design (i.e. is longitudinal), such as the current one (Piepho, 2019). Without having calculated R^2, no information could be provided regarding the explanatory power of each model. However, that was not deemed necessary since the focus was not on understanding the fit of each model but rather the p-values of its different fixed effects so as to determine whether they significantly affected the dependent variable. As GLMMs become more and more established in longitudinal research in other fields as well as SLA, and consensus is reached regarding formulas to calculate different measures, a more complete picture can be provided. Because the present study employed a mixed methods approach, qualitative analysis supported and enhanced the quantitative findings, compensating for any shortcomings.

One of the main findings was that students' DM use displayed stability, possibly having settled into an attractor state. Had the present study expanded over a longer period of time, such as two academic years instead of one, progress rates might have been observed in DM use. A wider span of observations might have captured significant changes in DM use and variability among participants in rate of change. Changes in the interactions between DM use and different individual and contextual factors might also have manifested, the examination of which could show how aspects of DM use evolved from before students discovered and engaged in key informal activities to when those activities became a constant habit. Understanding how some students evolved to become broader DM users could provide even more insight into the determining force of ISLL as inducing change, which in the present study was documented only in few exception-cases. A longer time span was not plausible presently. Because the aim was to recruit an adequate sample size for the implementation of statistical procedures at group level, a longer time span may have resulted in higher attrition rates, as not all students might continue their private language education after obtaining a B2 level certificate. Future research could track the DM development in a smaller number of participants but over a longer period of time and through a higher density of observations, employing quantitative CDST methodologies at individual level, in order to capture those developmental processes.

As acknowledged in Chapters 2 and 6, this study selected and investigated only a handful of possible contributors to DM use. Other factors, such as students' family background, socio-economic status or listening proficiency might have influenced learners' ISLL and motivation, affecting, in turn, their DM use. Future research could collect data on these factors as well, and investigate the dynamic interplay between them in order to build a more complete picture of EFL learners' DM use and development.

Finally, care should be taken to generalise all present findings, as results are limited by the sample's L1 (Greek) and age (adolescents) as well as the particularity of the context (exam centred EFL context in private language schools). Despite similarities documented with previous studies of participants of different L1s, ages and contexts, differences with other prior or future research may be related to those features.

7.4 Concluding remarks

The present study sought to investigate the spoken DM use of Greek adolescent EFL learners, its development over time and the contribution of different individual and contextual factors in broader DM range and higher DM frequency. DM research in SLA has investigated factors that could influence spoken DM use to explain how DMs are acquired. However, a review of previous literature revealed limitations in the conceptualisation of EFL contexts in DM research and methodological caveats, resulting in inconclusive findings, which leaves questions unanswered regarding EFL learners' DM use and development. The present study was also motivated by the researcher's previous findings and personal experience as an EFL teacher suggesting that there could be a link between DM use and out-of-class engagement with English (ISLL), a factor which previous DM research has failed to examine comprehensively. Furthermore, the link between frequent and broad DM use and other contextual and individual factors (e.g. motivation, proficiency, formal instruction) has not been clear, nor have previous studies tracked EFL learners' DM use over time. With the growing prominence of CDST research in SLA, tracking learning trajectories is considered pivotal in understanding pragmatic development and factors that shape it. However, previous DM research has not been CDST-theory driven. This study sought to address the aforementioned gaps. Research questions were formulated, and data collection and analysis followed the CDST paradigm.

The analysis showed that only a few EFL learners employed a high frequency and wide range of DMs (*so*, *well*, *just*, *like*, *I don't know, actually/in fact, you know*, *I mean*, *sort of/kind of*, and the category of general extenders), signalling textual, interpersonal, and textual-interpersonal functions in their spoken productions over the course of five months. What mainly differentiated those broad and frequent DM users from most participants was their constantly frequent, leisure-oriented, and self-initiated engagement in spoken production, interaction and/or exposure to spoken English through non-subtitled TV watching outside the class over that time-period. Spoken proficiency and formal education played a less crucial role in broad and frequent spoken DM use, contrary to what was previously found and/or assumed. The group overall remained stable in their DM use over time and there was little individual variation in terms of development, suggesting that learners' DM use was anchored in an attractor state. This indicates that forces were strong enough to not encourage further development for more limited DM users and at the same time causing broader DM users to maintain their frequent and broad DM use over time.

Embedding DMs in one's spoken production has been argued to reflect successful speaking (Müller, 2005; Buysse, 2011). This was not always the case for the spoken productions of present participants, who were assessed based on EFL exam criteria. Although DM use might reflect more natural spoken production (Jakupčević, 2019; Magliacane, 2020), it might be a peripheral feature of spoken performance. Furthermore, employment of certain DMs, such as some of the ones examined presently (e.g. *like*, *you know*, *I mean*, *sort of/kind of*, and the category of general extenders), may, justifiably, not have a place inside an exam-oriented EFL setting. Therefore, the present study is not in the position to propose the formal instruction of DMs as an antidote to overall limited learner DM use. If broader and more frequent DM use is acquired outside the class in more natural, everyday settings, as argued in the present study, rather than constituting the aim or product of formal education, EFL contexts need to be re-conceptualised by educators, policy makers and researchers. The potential of ISLL needs to be acknowledged and further researched if EFL learners' pragmatic spoken performance and motivation to speak at present are to be understood and enhanced.

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Appendices

Appendix A. HREC approval and consent forms

A1. Confirmation of HREC approval

Human Research Ethics Committee (HREC)

From	Professor Louise Westmarland The Open University Human Research Ethics Committee
Email Extension	louise.westmarland@open.ac.uk (6) 52462
To	Christina Lyrigkou
Project title:	The Dynamics of the Use of Discourse Markers: A longitudinal study of English Language Learners in Greece
HREC ref	HREC/2736/Lyrigkou

Memorandum

Date application submitted: 01/12/2017
Date of HREC response: 24/01/2018

This memorandum is to confirm that the research protocol for the above-named research project, as submitted for ethics review, has been given a favourable opinion by the Open University Human Research Ethics Committee.

Please note the following:

1. You are responsible for notifying the HREC immediately of any information received by you, or of which you become aware which would cast doubt on, or alter, any information contained in the original application, or a later amendment which would raise questions about the safety and/or continued conduct of the research.

2. It is essential that any proposed amendments to the research are sent to the HREC for review so they can be recorded and where required, a favourable opinion given prior to any changes being implemented (except only in cases of emergency when the welfare of the participant or researcher is or may be affected).

3. Please include your HREC reference number in any documents or correspondence. It is essential that it is included in any publicity related to your research, e.g. when seeking participants or advertising your research so it is clear that it has been reviewed by HREC and adheres to OU ethics review processes.

4. You are authorised to present this memorandum to outside bodies such as NHS Research Ethics Committees in support of any application for future research clearance. Also, where there is an external ethics review, a copy of the application and outcome should be sent to the HREC.

5. OU research ethics review procedures are fully compliant with the majority of grant awarding bodies and where they exist, their frameworks for research ethics.

6. At the end of your project, you are required to assess your research for ethics related issues and/or major changes. Where these have occurred you will need to provide the Committee with a HREC final report to reflect how these were dealt with using the final report template on the research ethics website - http://www.open.ac.uk/research/ethics/human-research/full-review-process - final_report

Best regards

Louise Westmarland

Professor Louise Westmarland
The Open University Human Research Ethics Committee

A2. Recruitment email (Translated into Greek)

Dear Sir or Madam,

I am writing to enquire about conducting longitudinal research at your school this school year (October 2018–April 2019). I am a PhD student at the department of Wellbeing, Education and Language Studies at the Open University in UK, supervised by Dr. Caroline Tagg (http://www.open.ac.uk/people/ct7565) and Professor Agnes Kukulska-Hulme (https://iet.open.ac.uk/profiles/agnes.kukulska-hulme). Also, I hold a MSc in Applied Linguistics and Second Language Acquisition from the University of Oxford, UK. In my research project "Young learners' engagement with English in their free time through informal sources", I am looking into students' contact with the English language outside the classroom, and how this exposure can influence different aspects of their learning process.

If your school agrees to participate in my research, I would be very interested in following the progress of your students throughout the school year (earliest start date: October 2018 and latest finish date: April 2019). The students would need to be preparing for B2- or C2-level certificate examinations. By participating in the research, your school would be contributing to a project that will deepen our understanding of how contact with the English language in informal settings can inform language learning. This could have important implications for the content of formal language instruction, the format of future language assessments, and the design of textbooks.

The commitment from your school would be to allow me to visit the school 4 times throughout the 6-month period and each time:

(1) distribute a 10-minute questionnaire to the students,
(2) conduct 10-to-12-minute speaking activities with each student in English,
(3) interview each student for 10-15 minutes in Greek, and
(4) audio-record the teacher in one of your students' lessons.

The different stages of this procedure can take place before, after or during the students' lessons, whenever it is convenient for you, the teachers and the students, so as to cause minimum obstruction. It has been piloted that the procedure can take place in one week, with me visiting the school twice that week. This means that, during the school year, I would need to visit your school on four different weeks and each week conduct my research on two days. You can also see the table below:

Week 1 (x4)	
Day 1	**Day 2**
• **Questionnaire** (10 minutes) • **Speaking activities** (10-12 minutes)	• Interview **(10-15 minutes)** • Audio-recording of a lesson

If you decide to participate in this research project, then there are certain benefits for your students. First of all, by participating in the different speaking activities, the students will be able to practise their speaking. Moreover, the students will be taking part in university research, which they might find a novel experience and, therefore, interesting, entertaining and educational. Finally, both teacher and student participants will be main contributors to research which might initiate changes in the instruction, assessment and content of English language learning in Greece.

The Open University has strict ethical procedures on conducting ethical research with young people, consistent with current British Educational Research Association guidelines. Before beginning the project, I will inform students, parents and guardians about the research, stress the voluntary nature of their participation and offer them time to raise questions. Throughout the research, students will be able to withdraw at any time up to six months after the beginning of the study (i.e. up to 01/06/2019). Finally, even if the school agrees to take part in the study, I will stress

to the students from the beginning that they are under no obligation to participate. All participants, including the students, the teachers and the school, will be made anonymous in research reports. However, if you prefer otherwise, the school and its contribution can be named in my PhD thesis and in future publications of my research (e.g. articles, books, conference presentations). The data collected will be kept strictly confidential and not used other than specified without the further consent of all involved being obtained.

If you feel it would be appropriate for your school to participate, please do not hesitate to contact me. We can arrange a call where I can provide more information about what is involved in the project or I can come by the school at any time convenient to you.

Thank you very much for your time and attention.

Kind regards,
Christina Lyrigkou

Email: christina.lyrigkou@open.ac.uk
Contact number: 6983905727

A3. Student-participant information sheet (Translated into Greek)

Information Sheet for Students

A study of adolescent English language learners in Greece

Please take some time to read this information and ask questions if anything is unclear.
Contact details will be found at the end of the document.

Summary of key points

1. This is an invitation to participate in my PhD research which will be carried out in your language school from October 2018 to April 2019. The research is about your contact with English in your free time outside the school.
2. You will be asked to take part in speaking activities, which will be audio-recorded, and I will also audio-record some of the lessons with your teacher. I will also ask you to complete a questionnaire and I will interview you in Greek.
3. The data you provide will be made anonymous but will be used in my PhD thesis, future publications of my work and they will also be used by other researchers.
4. Your participation is **voluntary**. You do **not** have to take part if you don't want to and this will not affect your progress at your school.

Dear Student,

My name is Christina Lyrigkou, and I am a PhD student at the Open University in the UK. I invite you to take part in my 6-month research study with the rest of your class. I am carrying out this research study for my PhD. Your English language school has agreed to take part in my study about your contact with English outside the classroom in your free time and the effect this has on your speaking. The research will take place from October 2018 to April 2019. I hope you will take part but, before you decide, it is important that you understand what the study will involve. The Open University Ethics Committee has reviewed and approved this research.

What will you be asked to do?
I will come to see you at your language school to explain to you and your classmates my research. The research has 4 stages that will be repeated 4 times during the school year.

Stage 1: I will give you a questionnaire to complete about the activities you do in English in your free time outside the class.
Stage 2: I will see you individually in a quiet room near your classroom for a speaking activity. We will talk together in English for 10 minutes and our discussion will be audio-recorded.
Stage 3: I will interview you in Greek for 10-15 minutes about yourself.
Stage 4: I will audio-record your teacher during one of the lessons. The aim of the lesson audio-recording is to record your teacher and not you.

What are the possible risks and benefits of taking part?
You might feel concerned about being audio-recorded or participating in the research in general. If you feel any stress or discomfort, you can withdraw at any stage up to 01/06/2019, without giving any reason. The benefit for taking part in this research is that during the speaking activity you will have the opportunity to further practise your speaking in English.

What happens to the data you provide during the research?
All personal information that I will collect during the research (name, surname) will be kept strictly confidential and will be edited out of the recordings. You will be anonymised and a code will be used to identify you. Only I will listen to the audio-recordings of the Greek interviews. The recordings of the speaking activities and lessons will be listened to by me and three other experts.

During the research, all information will be kept in password-protected files in a password-protected computer.

What happens at the end of the research?
The results of this research will form the basis of my PhD thesis. On successful submission of my PhD thesis, it will be deposited in print and online at the Open University to facilitate its use in further research. The digital online copy of the thesis will be deposited with Open Research Online and will be published with open access meaning that it will be available to all internet users. At the end of this project, your responses to the questionnaire and the transcripts of the audio-recordings collected from the speaking activities (but not the interviews in Greek), will be deposited online at a data storage service, the Open Research Data Online ("ORDO") for use by future researchers. If you want more information about ORDO, you can visit this website: http://www.open.ac.uk/library-research-support/research-data-management/open-research-data-online. At the end of the study, I will send a brief report of the research to your school and you are welcome to see it. In the future, I will present the results in publications of my research (e.g. academic journals, conference papers). I will not identify you in any reports of the research and your data will still be anonymised when available publicly. Following the Open University Research Data Management Policy, all data collected for the study will be destroyed 10 years after the completion of my PhD.

What should I do now?
If you agree to take part in this study, please fill in the Consent Form and return it to your teacher. Taking part in this research is completely **voluntary**. You will be free to withdraw from the research at any point up to 01/06/2019, without giving any reason. You will only have to let me know as soon as possible. This will not affect your progress at the school in any way. You also have the right to ask for your data to be removed after your participation by letting me know up until 01/06/2019. If you need any more information or clarifications before or during the study, you can find my contact details below. I will be happy to talk with you in more detail.

Thank you for taking the time to read this information sheet ☺

Christina Lyrigkou
PhD student at the Department of Wellbeing, Education and Language Studies, The Open University (Stuart Hall, Kents Hill, Milton Keynes, MK7 6AA)
Email: christina.lyrigkou@open.ac.uk / **Contact number**: **6983905727**
Lead Supervisor: Dr. Caroline Tagg, Email: caroline.tagg@open.ac.uk

Data Protection: The Open University is the Data Controller for the personal data that you provide. The lawful reason for processing your data will be that conducting academic research is part of the Open University's public task. (The consent we request from you relates to ethical considerations). You have a number of rights as a data subject:

- To request a copy of the personal data we have about you
- To rectify any personal data which is inaccurate or incomplete
- To restrict the processing of your data
- To erase your data
- To object to us processing your data

If you are concerned about the way we have processed your personal information, you can contact the Information Commissioner's Office (ICO). Please visit the ICO's website for further details.

A4. Student-participant consent form (Translated into Greek)

Consent Form for Students

A study of adolescent English language learners in Greece

- Your English language school has agreed to take part in a study run by The Open University (UK) regarding your contact with the English language in your free time. The study will start in October 2018 and finish in April 2019.
- If you take part, I will visit you and your classmates at your language school 4 times during the school year. Each time, I will give you a questionnaire to complete and I will audio-record you during speaking activities with me in English and an interview in Greek. I will also audio-record your teacher in some of your lessons.
- **If you are happy to take part, please fill in the form below and return it to your teacher as soon as possible.**

  - ✓ To find out more about the study, please read the attached information sheet.
  - ✓ I have read and understood the details of the above study and have had the opportunity to ask questions and discuss the study with my teacher and classmates.
  - ✓ I have received satisfactory answers to my questions.
  - ✓ I understand that this research project has been reviewed by, and received a favourable opinion, from the OU Human Research Ethics Committee - HREC reference number: 2736.
  - ✓ I understand that participation is **voluntary** and that I am free to withdraw at any time up to 01/06/2019, without giving any reason and without my progress at the school being affected in any way.
  - ✓ I understand that all information I provide (audio-recordings, responses in the questionnaire and interviews) will be **anonymised**, but will be used in the PhD thesis and future publications of the researcher's work (e.g. in academic journals, conference papers, etc.). Transcripts of data (except for the interviews in Greek) will also be stored and made available online and will be used by other researchers.
  - ✓ I understand that all data will be destroyed 10 years after the completion of the researcher's PhD.

  I accept to take part in the study.

Name of student: _____ Signature: _____ Date: _____
(Name of parent: _____ Signature: _____ Date: _____)
Name of researcher: _____ Signature: _____ Date: _____

A5. Teacher-participant information sheet (Translated into Greek)

Information Sheet for Teachers

A study of adolescent English language learners in Greece

Please take some time to read this information and ask questions if anything is unclear. Contact details will be found at the end of the document.

Summary of key points

1. This is an invitation to participate in my PhD research which will be carried out in your language school from October 2018 to April 2019. The research is about your students' contact with English in their free time outside the school.
2. Apart from students' contact with English outside the school, I am also interested in the content of English language to which your students are exposed inside the class, so I am asking to audio-record you in some of your lessons.
3. The data you provide will be made anonymous but will be used in my PhD thesis, future publications of my work and they will also be used by other researchers.
4. Your participation is **voluntary**. You do **not** have to take part if you don't want to and this will not affect your work at the school.

Dear Teacher,

My name is Christina Lyrigkou, and I am a PhD student at the Open University in the UK. I invite you to take part in my 6-month research study with your class. I am carrying out this research study for my PhD. Your English language school has agreed to take part in my study about your students' contact with English outside the classroom in their free time and the effect this has on their speaking. The research will take place from October 2018 to April 2019. I hope you and your class will take part but, before you decide, it is important that you understand what the study will involve. The Open University Ethics Committee has reviewed and approved this research.

What will you be asked to do?
1. I will audio-record you during one of your lessons four times over these 6 months. You will be notified a week in advance of the date of my visit. If you object to the proposed date, you can suggest a date that is convenient to you. When the date is scheduled, I will not sit inside the classroom but leave an audio-recording device on your desk, so that your voice can be recorded in a clear way.

2. At the end of the school year, I will ask you for access to the textbook and any other instructional material you used in the class, so that I can gather data on its content.

What are the possible risks and benefits of taking part?
You might feel concerned about being audio-recorded or participating in the research in general. If you feel any discomfort, you can withdraw at any stage up to 01/06/2019, without giving any reason. The benefit for taking part in this research is that you will be contributing to a project that will deepen our understanding of how contact with the English language in informal settings can inform language learning.

What happens to the data you provide during the research?
All personal information that I will collect during the research (name, surname) will be kept strictly confidential. You will be anonymised and a code number will be used to identify you. Only me and one more expert will have access to the lesson audio-recordings. During the research, all information will be kept in password-protected files in a password-protected computer. Upon request, I can share with you copies of the audio-recordings of your lessons.

What happens at the end of the research?
The results of this research will form the basis of my PhD thesis. On successful submission of my PhD thesis, it will be deposited in print and online at the Open University to facilitate its use in further research. The digital online copy of the thesis will be deposited with Open Research Online and will be published with open access meaning that it will be available to all internet users. At the end of this project, the transcripts of the audio-recordings collected from the lesson observations will be deposited online at a data storage service, the Open Research Data Online ("ORDO") for use by future researchers. If you want more information about ORDO, you can visit this website: http://www.open.ac.uk/library-research-support/research-data-management/open-research-data-online. At the end of the study, I will send a brief report of the research to your school and you are welcome to see it. In the future, I will present the results in publications of my research (e.g. academic journals, conference papers). I will not identify you in any reports of the research and your data will still be anonymised when available publicly. Following the Open University Research Data Management Policy, all data collected for the study will be destroyed 10 years after the completion of my PhD.

What should I do now?
If you agree to take part in this study, please fill in the Consent Form and return it to me. Taking part in this research is completely **voluntary**. You will be free to withdraw from the research at any point up to 01/06/2019, without giving any reason. You will only have to let me know as soon as possible. This would not affect your work at the school in any way. You also have the right to ask for your data to be removed after your participation by letting me know up until 01/06/2019.

If you need any more information or clarifications before or during the study, you can find my contact details below. I will be happy to talk with you in more detail.

Thank you for taking the time to read this information sheet ☺

Christina Lyrigkou
PhD student at the Department of Wellbeing, Education and Language Studies, The Open University (Stuart Hall, Kents Hill, Milton Keynes, MK7 6AA)
Email: christina.lyrigkou@open.ac.uk / **Contact number**: **6983905727**
Lead Supervisor: Dr. Caroline Tagg, Email: caroline.tagg@open.ac.uk

Data Protection: The Open University is the Data Controller for the personal data that you provide. The lawful reason for processing your data will be that conducting academic research is part of the Open University's public task. (The consent we request from you relates to ethical considerations). You have a number of rights as a data subject:

- To request a copy of the personal data we have about you
- To rectify any personal data which is inaccurate or incomplete
- To restrict the processing of your data
- To erase your data
- To object to us processing your data

If you are concerned about the way we have processed your personal information, you can contact the Information Commissioner's Office (ICO). Please visit the ICO's website for further details.

A6. Teacher-participant consent form (Translated into Greek)

Consent Form for Teachers

A study of adolescent English language learners in Greece

- Your English language school has agreed to take part in a study run by The Open University (UK) regarding your students' contact with the English language in their free time. The study will start in October 2018 and finish in April 2019.
- If you take part, I will audio-record you during some of your classes.
- **If you are happy to take part, please fill in the form below and return it to me as soon as possible.**
- To find out more about the study, please read the attached information sheet.
  - ✓ I have read and understood the details of the above study and have had the opportunity to ask questions and discuss the study with the researcher.
  - ✓ I have received satisfactory answers to my questions.
  - ✓ I understand that this research project has been reviewed by, and received a favourable opinion, from the OU Human Research Ethics Committee - HREC reference number: 2736.
  - ✓ I understand that participation is **voluntary** and that I am free to withdraw at any time up to 01/06/2019, without giving any reason and without my work at the school being affected in any way.
  - ✓ I understand that all information I provide (audio-recordings) will be **anonymised**, but will be used in the PhD thesis and future publications of the researcher's work (e.g. in academic journals, conference papers, etc.).
  - ✓ I understand that all data will be destroyed 10 years after the completion of the researcher's PhD.

I accept to take part in the study.

Name of teacher: _____ Signature: _____ Date: _____
Name of researcher: _____ Signature: _____ Date: _____

A7. Non-participant consent form to audio-record lesson (Translated into Greek)

Student Consent Form to audio-record lessons

A study of adolescent English language learners in Greece

You are given this form because you opted out from the study. Although you will not participate in the study, I am asking for your consent to audio-record your teacher in some of her lessons with your class at 4 times during the school year. Although I will audio-record the lesson, the aim is to record your teacher and not you.

- If you accept, please fill in the form below and return it to me as soon as possible.

I give my consent to the researcher to audio-record some of the lessons.

Name of student: _____ Signature: _____ Date: _____
Name of researcher: _____ Signature: _____ Date: _____

Appendix B. Data collection instruments

B1. Speaking activities (Layout with examples from each time-point)

1. Opening (repeated at each time-point)

- Thank participant.
- Remind them the purpose of the activities and anonymity of personal data.
- Ask permission to record.
- Remind them that they can withdraw if they feel uncomfortable or stressed.

2. Main part: Activities

Table 1. Speaking Activities.

Activity content	Time 1	Time 2	Time 3	Time 4
Introductory Qs	(1) How often do you come to this school? (2) At what age did you start learning English?	(1) How far away do you live from this school? (2) How did you get here today?	(1) Are you going to do anything special this weekend? (2) What is something you do during the weekends which you can't do during the week?	(1) How are you going to spend your Easter holidays?
Video	(a) "7 signs you're addicted to social media" (ad spot, 0:00-2:06) (b) "Are you living an Insta lie?" (ad spot, 0:00-2:00)	"Cute dog love story" (ad spot, 0:00-2:19)	"I Am Number Four – Bullying scene" (movie scene, 0:00-1:06)	"The Hunger Games – Shooting the apple scene" (movie scene, 0:00-2:01)

Activity content	Time 1	Time 2	Time 3	Time 4
Qs based on Video	(1) I'd like you to describe what happened in this video. (2) Are you like those people in the video? Are you addicted to social media? Can you give some examples? (3) Do you have friends who are similar to those people in the video? Can you give some examples?	(1) I'd like you to describe what happened in this video. (2) Some people say that dogs are man's best friend. Do you agree? Why/ Why not? (3) I'd like you to talk to me about your best friend. What does he or she look like and what is their personality like?	(1) I'd like you to describe what happened in this video. (2) What do you think is going to happen next in the scene? (3) Do you like sports? What's your favourite sport? (4) Do you like watching sports or participating in sports and why?	(1) I'd like you to describe what happened in this video. (2) How would you feel if someone didn't believe in you or didn't pay attention to you? (3) Do you like going out or staying at home? What do you usually do when you go out with friends?
Picture	Group of friends playing computer games VS. group of friends playing in a band 	Couple at a hotel VS. group of friends camping 	Family travelling by train VS. family travelling by plane 	Group of friends watching a movie at the cinema VS. group of friends watching a movie at home 

Activity content	Time 1	Time 2	Time 3	Time 4
Qs based on Picture	(1) I'd like you to describe and compare these two pictures. (2) Would you rather play video games or a musical instrument? Why?	(1) I'd like you to describe and compare these two pictures. (2) Would you rather stay at a fancy hotel or go camping with your friends? Why?	(1) I'd like you to describe and compare these two pictures. (2) Would you rather travel by plane or by train? Why?	(1) I'd like you to describe and compare these two pictures. (2) Would you rather watch a movie at the cinema or at home? Why?

2.1 Example-transcript S14 (Time 1)
(DMs presented in bold on the transcript)

<R> how often do you come to this school? <\R>

<S14> umm I come uh to this school uh twice a week uh for about two hours.. on Tuesday and Friday <\S14>

<R> great.. how many hours a week in total? <\R>

<S14> umm each lesson uh lasts for fifty minutes fifty minutes and uh I participate in two uh teaching hours of the school uh **so** I guess it's about one ho- eh one hour and forty minutes minutes uh each day and uhm in total about uh two hours and and eighty minutes <\S14>

<R> okay around... <\R>

<S14> three hours and twenty minutes <\S14>

<R> yeah yeah great perfect okay now I'll show you this video I want you to uh watch it and then describe to me what you saw <\R>

(video is shown)

<R> okay.. what did you see? <\R>

<S14> I saw seven signs that you're addicted on social media um I'm **kinda** sad to say that I- I have all of those (laughter) uhm most notably I saw some people **just** uh taking pictures uh of a new stuff they got recently or uhm.. the fact that they are having fun outside or ... yeah uhm... yeah I-I do all of those <\S14>

<R> yeah many people do <\R>

<S14> I.. I think that uh from what I saw here that social media being addicted to them is uh bad.. uh because uh I think on the last sign the seventh one uh we saw a man uh watching- no it was the sixth one.. uh we saw a man watching a film with his uh girlfriend wife **whatever** uhm having fun together and when the phone started ringing the man was **like** uh "yo look at this.. pic on Instagram" and uh the girl was trying to watch the film they **just**- she **just** left him she wasn't hugging him anymore he was she was **like** "get this outta here".. **so**... **yeah** I believe that uhm ... ad- social media addiction is a pre-known issue but uh I don't think that some- that most of us really care to fight it.. I mean that once you get used to it you don't- and since you don't need to stop it you won't stop it <\S14>

<R> mhm yeah no I agree and.. I'm like that too what about your friends or the people you know how.. has any- anything that you saw there has this ever happened to you?.. any particular example? <\R>

<S14> yeah <\S14>

<R> for example? <\R>

<S14> everything uh **like** on the first <\S14>

<R> give me give me yeah <\R>

<S14> on the first uhm uh **like** on the first sign here many of my.. female friends let's say it like that <\S14>

<R> yeah <\R>

<S14> and sometimes boys although it's a lot rare eh rare with boys uhm they always upload **like** pics of their new shoes **or something** uh: and uh: it happens to the boys but it doesn't happen with shoes it more likes- they like to flex they like- <\S14>

<R> what's that? <\R>

<S14> uh **you know**... <\S14>

<R> show off? <\R>

<S14> show off yeah <\S14>

<R> ah okay yeah <\R>

<S14> and uh: **like**.. I have shown off uh recently when I too- when I bought a new mouse I was **like just like** uploading love you more than pizza (laughter) <\S14>

<R> (laughter) okay yeah <\R>

<S14> yeah it is... <\S14>

<R> makes sense <\R>

<S14> ev-ev- very well-known <\S14>

<R> yeah yeah yeah <\R>

<S14> issue <\S14>

<R> no I agree yeah.. right ehm okay now I'll show you these two pictures.. here this and this and I want you to compare them and tell me why you think these people enjoy these activities <\R>

<S14> okay uhm on picture a we can see uh a group of friends having fun around a video game uhm for some reason they have controllers on a mac they can't play even games but anyway uh: on the second picture we can see uh a group of friends uhm they are probably a band although we can't see the name of the band anywhere like on the drums uhm: they're also having much fun at- from what I can see.. uh: okay **so** uh *TSK* both pictures illu- illustrate people **like** having fun with each other and laughing.. **so** we can see that both pictures uh include uh ways of uh: entertainment.. on the ehm whereas on the s- on the first picture they are having fun uh: through video games or computer games or however you wanna call them uh: whereas on the second picture eh: they're having fun uh through art I believe a form of art music.. uhm I can't say that video games are more beneficial than music **so:** I guess that the second one is more beneficial for them as well uh: but we can't uh say that video games aren't as fun as playing an instrument.. for some people <\S14>

<R> that's true.. yeah.. would you rather play a game or a musical instrument? <\R>

<S14> uh yeah a game (laughter) because I'm **kind of** uh: *TSK* I-I know how to play some notes **like** on a piano but uh games are better (laughter) <\S14>

<R> yes it's more fun.. great perfect (Greek) <\R>

2.2 Example-transcript S14 (Time 2)

<R> how far away do you live from this school? <\R>

<S14> **so** uh I believe that uhm I'm not sure how far I actually live from this school but it is- uh but I would say it's really uh it's pretty far uhm *TSK* but not like in other countries when where ehm the destination between a school and a- a house is **you know** ginormous you would take **like** forty minutes to get there <\S14>

<R> that's true we're lucky <\R>

<S14> but you are going to get tired to get-get here from my from my home with feet eh by feet <\S14>

<R> on foot <\R>

<S14> on foot <\S14>

<R> on foot okay mm how did you get here today? <\R>

<S14> ehm my mum drove eh drove me here <\S14>

<R> okay perfect and what's your favourite means of transport? <\R>

<S14> I would say.. car because uhm *TSK* I know it's not the safest one but I would say it is the most practical one **you know?** you are safer than uh than uh you would be on a motorbi- on a motorcycle uhm you have uh **you know** uhm *TSK* temperature chan- I don't know how that's that is in English <\S14>

<R> ah <\R>

<S14> **you know** warmers (laughter) <\S14>

<R> ah heating <\R>

<S14> heating heating <\S14>

<R> okay good good good <\R>

<S14> **so** you're you're not going to be cold in winters you don't need to put stupid helmets on your head <\S14>

<R> okay yeah no that makes sense great okay like last time I'm gonna show you a video a different video this time.. I want you to uhm watch it and then tell me what you saw <\R>

(video is shown)

<S14> she is hot <\S14>

<R> (laughter) okay relax please <\R>

<S14> (laughter) <\S14>

<R> okay: what did you see? <\R>

<S14> I saw a man uhm *TSK* falling in love I guess uh with a- a lady <\S14>

<R> mhm <\R>

<S14> and uh *TSK* because of his **you know** ni- good attitude because uh of falling in love he gave his food to a dog eh I think it was a homeless dog <\S14>

<R> yeah <\R>

<S14> a-a stray dog <\S14>

<R> a stray dog good <\R>

<S14> yeah uhm **so** I guess that the dog uh **kind of** wanted just to help him because uh: he gave him food and uhm at first he washes his car of uh the poo of a pigeon uhm then he.. it **kind of** chases away dogs that want to do their thing eh on the ro- on the on the wheels of his car.. uhm:.. and eventually he steals his bag so that uh he can meet the girl that he liked and eventually start a conversation <\S14>

<R> great <\R>

<S14> uh **so** I believe that uh what this video wants to teach us is that if you do nice things they- they will pay off eventually <\S14>

<R> very nice yeah what do you think are the important qualities of a good friend? <\R>

<S14> uh okay the important qualities of a good friend is no- is being honest not being afraid to say what you think about your friend because your comments might-might- might actually be beneficial for them uhm: let's an exa-an example of that is maybe your friend has been dressed a little too- too excessive.. and uhm: if you don't say something and you just say oh you're so beautiful uhm then they will might end up eh getting ridiculed by others **so:** I guess that that honesty first of all uh then uh loyalty we shouldn't be eh no one should betray his friends because then he's an animal he deserves to die (laughter) uh **so:**... and we have to be a.. be brave enough to take uh action when- when it is for the best of our friends because maybe they will they are too scared to do something that they should do because it will be good for them unless it's a choice of them **you know**? if they want to choose between two things which is not uh ob-obje- eh objectively objectively good eh someth- objectively good of her good for them because e- e- the first choice might be good for you but the second one might be good for him **so** you could- you shouldn't be-.. choose for them in that case <\S14>

<R> yeah that's right <\R>

<S14> but if it is something that is objectively good for them then you should do it- then you should uhm help them find find their way out of the of the situation I guess <\S14>

<R> great very nice answer.. why do you think some people have pets? <\R>

<S14> **well** uhm pets play a huge role in our lives because uhm especially a dog or a cat might might be uhm: *TSK*.. something like a best friend for you they will always be there for you no matter what.. especially the dog because the cat might get angry at you (laughter) <\S14>

<R> you never know with cats <\R>

<S14> yeah you never know with cats uhm but the dog is always loyal it is the man's best friend as we: say <\S14>

<R> true <\R>

<S14> and uhm: I would say that they are some of the greatest uh best friends of- a man could find <\S14>

<R> okay do you have pets? <\R>

<S14> hmm no but I would like to <\S14>

<R> what would you like to have? <\R>

<S14> I would like to have them uh so that uhm when I'm feeling lonely I can **just** uh *TSK* **you know…** talk to them maybe <\S14>

<R> good yeah <\R>

<S14> but that might sound a bit creepy <\S14>

<R> no it's not why? it's not <\R>

<S14> uhm **so**.. and uhm.. the only- uhm dogs will always uh sympathise you **you know**? <\S14>

<R> okay yeah yeah you're a dog person <\R>

<S14> I'm a dog person but uh because of the cuddling of my- I like cud-I like cuddling around **so** I guess that I would also like a cat I used to have a cat on my village but uh he ran away because my grandma went off to Germany he got angry <\S14>

<R> okay <\R>

<S14> alé <\S14>

2.3 Example-transcript S14 (Time 3)

<R> did you do anything interesting anything fun last weekend? <\R>

<S14> I had a party <\S14>

<R> ah okay <\R>

<S14> uh it was my nameday **so** I guess it was fun <\S14>

<R> great <\R>

<S14> we: the homies ca- the homies came over and we played some video games uh: and we had some great fun I guess <\S14>

<R> perfect ehm and what is something you usually do at the weekend that you don't do during the week? <\R>

<S14> playing games because I have uh:.. eh tons of studying on-all- for school **so** I don't have time to do that and I don't think I'm allowed to do it uh: **so yeah** that and something else that I don't do is rest <\S14>

<R> you don't do during the week <\R>

<S14> yeah <\S14>

<R> hmm okay nice.. right I'm going to show you a video like last time I want you to watch it and then tell me what you saw <\R>

(video is shown)

<R> okay what happened in this video? <\R>

<S14> **well** we can see a young man who is obviously really interested in a young lady (laughter) uhm: but he's I guess his-his attempt to get closer was interrupted by some uh bullies that uh threw a ball at a kid's face I don't know why would you do that uh… the kid fell down.. his drink eh got- eh was spilled and uh his books fell off his hand- hands I guess I don't remember if it was on his hands or in his bag and they fell off when he fell out but whatever uh: and this kid **just** uh saw what happened and went to help the: kid **you know**.. get himself uhm: tidy <\S14>

<R> okay… what do you think is going to happen next in this scene? <\R>

<S14> **well** uhm: the:… the man who is helping the- the kid right now is probably going to eh… kick some ass (laughter) **so: yeah** I expect to see bullies get- getting wrecked <\S14>

<R> nice.. do you like sports and what's your favourite sport? <\R>

<S14> I like basketball a lot.. I have always been a fan of it I find it an interesting game I think- I find that it that it requires teamwork.. I like teamwork.. uh: and yeah overall it's- it's a really uh demanding but interesting game <\S14>

<R> do you enjoy watching sports or participating in sports more? <\R>

<S14> uh: **well** uhm to be honest I'm not- I enjoy participating in sports but my: body is not let's say designed for sports because I get tired easily **so:** even though I try it's not always easy **so** I have to say that I prefer watching them <\S14>

<R> nice and describe a place you like to go and what do you like about this place? <\R>

<S14> uh okay... a place I like to go is uhm signore <\S14>

<R> ah nice <\R>

<S14> it's a restaurant uh in-in-in in the town uhm: I go there with my best friends all the time uh: great food we have a lot-lots- tons of fun.. and the best thing there is that our table **you know** the table that we sit all the time and uh <\S14>

<R> ah you have a special <\R>

<S14> a-a spot <\S14>

<R> nice <\R>

<S14> it's it's next to the WiFi router **so** we have everything we have food we have seats and we have WiFi <\S14>

<R> perfect combination okay and last thing.. I want you to compare these two pictures <\R>

<S14> **so** on the first image uh we can see a family uh travelling uh with uh with a train uh we can see that a man- we can see that all of them are pretty much distracted by something uh the kid is uh… he isn't holding something but I guess that he's trying to **kind of** sleep uh the mother is looking outside of the window because she- she can't uh get- get uh- she wants to.. relax I guess uh and the father is reading a newspaper perhaps on the table we can see some toys uh: for the kid and eh a map.. **so** they they are obviously having a trip and they are trying to figure out where to go <\S14>

<R> nice <\R>

<S14> uh **so** on the next image we can see uh: a family uh tra-travelling uh by- uh by airplane.. uh we can see that uh they seem happy they seem uh: like.. they seem like a happy family.. uh they probably enjoy travelling uhm in contrast with the other family because we can see that they are

kind of concerned about where to go next and they're trying to relax.. we can see the young girl uh: *TSK* asking the air- the flight attendant about s- eh something uhm we don't know what this is we can't- we don't get any signs from the photo… uh but yeah they seem to: h- to have a good time even- even though they are in an airplane **you know** <\S14>

<R> (laughter) okay nice and would you rather travel by plane or by train? <\R>

<S14> uhm to be honest I have never travelled by train.. I think I have once but I- I don't I-I'm not sure if it was a train or a metro <\S14>

<R> ah okay <\R>

<S14> **so** uhm… even I prefer the- the airplane because you get to where you want much faster and uhm it-it-it is the number one safest uh: ve- vehicle <\S14>

<R> perfect great (Greek) <\R>

2.4 Example-transcript S14 (Time 4)

<R> okay what are you going to do for Easter? <\R>

<S14> why should I know? (laughter) <\S14>

<R> do you do anything with your family? <\R>

<S14> uhm not really, I- I look forward to the vaca- for the vacation but uhm other than going to the church and doing the standard stuff I won't do anything special <\S14>

<R> okay okay that's.. good enough okay video this time <\R>

<S14> oh hunger games <\S14>

<R> yes I want you to watch this scene and then tell me what you saw <\R>

(video is shown)

<R> okay <\R>

<S14> oh <\S14>

<R> what did you see in this video? <\R>

<S14> I got eh I-I saw a bunch of guys getting roasted (laughter) uhm: **well**.. I don't know the name of the character but I know that this that is Jennifer Lawrence in-in hunger games it is on the first movie <\S14>

<R> yes <\R>

<S14> uhm: I-I don't remember the name of the character though uh: **so** <\S14>

<R> Candice? <\R>

<S14> Ca-Candice yeah uh: although I- I think <\S14>

<R> I don't know <\R>

<S14> (inaudible) anyway (laughter) uh **so** it is let's call her.. Shirley uh *TSK* who does the first shot with a- with a bow and the arrow.. fails miserably… on the second one she hits **like** bullseye straight on- to the centre and uhm:.. on the third one she takes a risk by trying to shoot an apple- I don't know if it was on the- I don't- I didn't see if it is on a hand on a hand of someone or on a tray I guess it was on a tray uhm: *TSK* she hits the apple the apple- the arrow pierces through the apple and sticks it to the wall behind.. and uh then she **just** proceeds at roasting them all <\S14>

<R> great very nice ehm how would you feel if someone didn't believe in you or didn't pay attention to you? <\R>

<S14> personally I wouldn't go for the apple (laughter) <\S14>

<R> (laughter) okay <\R>

<S14> uhm I guess that I would look- I would feel disappointed but if I felt like uh: I had the skills and I was just not considered I'm **like**.. **so**.. where do you prefer it legs or head? <\S14>

<R> (laughter) you are pretty tough okay right.. ehm do you like going out or staying at home? <\R>

<S14> it depends.. if I- if I feel like it I'm going to go out with my friends have fun.. eat gyros <\S14>

<R> nice <\R>

<S14> uhm but if I want to stay in and just uh: game on <\S14>

<R> okay <\R>

<S14> I- I will do that <\S14>

<R> hmm.. okay.. nice.. what do you like doing when you go out? <\R>

<S14> hmm going out <\S14>

<R> apart from eating gyros (laughter) <\R>

<S14> yeah that has to be my favourite one (laughter) <\S14>

<R> okay <\R>

<S14> but uh: **so** I- we **just** like to walk around in the city uh look at stores mostly about the games and consoles **and stuff** <\S14>

<R> okay <\R>

<S14> uh: go on a: luna park amusement park yes uhm: **I don't know** it's a really standard way of going out I don't- it isn't any-anything special <\S14>

<R> special perfect okay that's good.. and last thing I want you to compare these two pictures.. and tell me if you prefer to go to the cinema or watch a movie at home <\R>

<S14> okay **so** uh on the first picture we can see a bunch of friends an elderly couple and a guy I don't know if he if there is anyone next to him and eh behind we can see a family I guess we can see a man a grandma and a little kid **so** we must suppose that they're a family.. and behind a group of friends.. uh: watching a movie on the: on a: cinema- on a cinema uhm on the second one- clip eh photo sorry I use streaming terms uhm: **so** on the second one we can see a family.. I don't know if it's a family I guess *TSK* family you kn- *TSK* it's the mum it's the kids and there is the aunt…

or it could be a relative (inaudible) but whatever uh: (laughter) they- they're seem to be watching a movie or a show on TV they're having their popcorns and their cups with uhm… with soda.. I gue- **something like that** a refreshment drink uh: they seem to be having fun in both cases… I believe that uhm: objectively for me and uh: **I mean** subje- subjectively because it yeah uh: the experience of uh watching a movie at the- at the cinema is a lot better than watching it home because I have noticed that when I watch a movie at the cinema and then I have the chance to re-watch it at home it is **like** it feels like the movie is **kind of** ruined for me (inaudible) TV <\S14>

<R> okay okay fair enough right nice very nice (Greek) <\R>

3. Closing (repeated at each time-point)
Thank participant and remind them of next stage in data collection.

B2. Questionnaire (Translated into Greek)

My contact with English in the last 24 hours

Please fill out this questionnaire about your contact with English in the last 24 hours.

1. In the last 24 hours, did you watch any videos in English?
☐ Yes
☐ No

1.a. If you answered "Yes", why did you watch videos in English?
☐ Only for homework
☐ Only for leisure
☐ Both

1.b. Did you watch any of the videos in English on a smartphone?
☐ Yes
☐ No

2. In the last 24 hours, did you watch any TV series or movies in English?
☐ Yes
☐ No

2.a. If you answered "Yes", why did you watch TV series or movies in English?
☐ Only for homework
☐ Only for leisure
☐ Both

2.b. Did you watch any of the TV series or movies in English on a smartphone?
☐ Yes
☐ No

3. In the last 24 hours, did you listen to songs with English lyrics?
☐ Yes
☐ No

3.a. If you answered "Yes", why did you listen to songs with English lyrics?
☐ Only for homework
☐ Only for leisure
☐ Both

3.b. Did you listen to any of the songs with English lyrics on a smartphone?
☐ Yes
☐ No

4. In the last 24 hours, did you read anything in English?
☐ Yes
☐ No

4.a. If you answered "Yes", what did you read in English and why?

	Only for homework	Only for leisure	Both	I didn't do this activity
textbook	☐	☐	☐	☐
book(s)	☐	☐	☐	☐
blog(s)	☐	☐	☐	☐
article(s)	☐	☐	☐	☐

song lyrics	☐	☐	☐	☐
post(s) on social media	☐	☐	☐	☐
comment(s) on social media	☐	☐	☐	☐
Other	☐	☐	☐	☐

4.a.i. If you selected "Other", please specify: _____

4.b. Did you read in English on a smartphone?
☐ Yes
☐ No

5. In the last 24 hours, did you write anything in English?
☐ Yes
☐ No

5.a. If you answered "Yes", what did you write in English and why?

	Only for homework	Only for leisure	Both	I didn't do this activity
I chatted (by writing) on social media (e.g. on WhatsApp, Instagram, Facebook)	☐	☐	☐	☐
I posted a comment(s) on social media	☐	☐	☐	☐
I wrote a status update(s) on social media	☐	☐	☐	☐
I wrote a blog entry	☐	☐	☐	☐
I wrote as part of my homework	☐	☐	☐	☐
Other	☐	☐	☐	☐

5.a.i. If you selected "Other", please specify: _____

5.b. Did you write in English on a smartphone?
☐ Yes
☐ No

6. In the last 24 hours, did you speak to anyone in English?
☐ Yes
☐ No

6.a. If you answered "Yes", how did you speak in English and why?

	Only for homework	Only for leisure	Both	I didn't do this activity
face-to-face	☐	☐	☐	☐
call or video-call (e.g. on Skype)	☐	☐	☐	☐
I sent a voice-message (e.g. on WhatsApp)	☐	☐	☐	☐
Other	☐	☐	☐	☐

6.a.i. If you selected "Other", please specify: _____

6.b. Did you speak in English through a smartphone?
☐ Yes
☐ No

7. In the last 24 hours, did you play games where you encountered English?
☐ Yes
☐ No

7.a. If you answered "Yes", in what ways did you have contact with English when you played games?
☐ read instructions in English
☐ listened to instructions in English
☐ wrote to a co-player in English
☐ spoke to a co-player in English
☐ Other

7.a.i. If you selected "Other", please specify: _____

7.b. Why did you play games?
☐ Only for homework
☐ Only for leisure
☐ Both

7.c. Did you play games on a smartphone?
☐ Yes
☐ No

8. Is there anything else you did in English in the last 24 hours?

9. Are all of the above answers typical of your everyday contact with English outside the class?
☐ Yes
☐ No

9.a. If you answered "No", what was different this time and why?

10. What is your name and surname?

Thank you very much for completing this questionnaire! ☺

B3. Interviews (Protocol with examples from each time-point)

Translated to English (original in Greek)

1. Opening (repeated at each time-point)

- Thank participant.
- Remind them the purpose of the interview and anonymity of personal data.
- Ask permission to record.
- Remind them that they can withdraw if they feel uncomfortable or stressed.
- Ask them to hand in the completed questionnaire.

2. Main Part: Interview

2.1 Example-transcript S14 (Time 1)[45]

R: Okay, first of all, some general information. How old are you?

S14: Fifteen.

R: And which class are you attending at this school?

S14: The "CPE".

R: And when did you start learning English?

S14: At the third class of primary school.

R: Which class do you attend in the morning school?

S14: The third year of junior high school.

R: And how many hours of classes do you attend every week?

S14: Both here and at the morning school?

R: Yes.

S14: Here it's 3 hours, let's say, and at school it's 2.

R: And do you have any private English classes at home?

S14: No.

R: So, in total you attend 5 hours a week? Is that right?

S14: Yes.

R: Okay, thank you. Now, let's look at your questionnaire. I see that you did a lot of things in English in your free time in the last 24 hours. And you also ticked that all this is typical of your use. Which of these is your favourite activity?

S14: Above all I really like playing games that have a good storyline and I have to understand dialogues in English or watch or make my own videos on YouTube and upload them or just watch videos of others because they are.... In my opinion, it is much more fun to watch English videos than Greek because the quality is far better.

[45] Transcripts are translated from Greek. Parts in quotation marks were uttered by the participant or the researcher in English.

R: And do you speak in English when you make videos?

S14: Yes, I'm speaking in English. I don't have many followers but I'm speaking in English because I want to reach a large audience, people from different countries. I'm making gaming videos, about gaming. I record myself playing a game and speaking at the same time, explaining what I'm doing during the game. I saw a lot of YouTubers make videos, enjoy it and get positive feedback and I wanted to try to see if I can do it. And when I started it was really bad, I didn't have the right means to do it, so the first videos were gaming videos on my mobile. I had to download a recorder on my mobile and I had to do it there, it wasn't the best quality. But then I got a PlayStation, I learned to record on the PlayStation to do some editing and now I got a computer and maybe I can do even more in the future.

R: That's interesting. Is this something you do frequently?

S14: Yes, okay not every day but definitely every week.

R: I see here that you ticked the option that you talked to someone in English for leisure. And you ticked all options, face-to-face, through WhatsApp etc. Can you give me some details?

S14: This is very common for me because apart from the fact that English is a very big part of my life, I also like to use it when I do things that I like, like playing games. And I also like it as a language. Actually, I think I speak in English the same amount I speak in Greek. I speak mainly to my friends.

R: And is this something you do frequently?

S14: Yes, I speak to my friends every day. And I also speak on my own all the time.

R: And what do you talk about?

S14: Different things. Something weird I always do in English is I take lines from my favourite movies and try to imitate the character's voice in English.

R: That's interesting. And do you do this for fun or to practise for homework?

S14: No, just for fun. I love speaking in English.

R: What is English for you?

S14: I will say something that I think applies to most young people my age. English is a way of life. It is a different perspective on the world, it connects you to the English and American culture which is I think one of the most complex and beautiful cultures in the world and maybe these nations do not have a great history from a national point of view, but it's their culture that creates their history.

R: That's very interesting. And what's the most important goal you would like to achieve in terms of English?

S14: I want to be able to speak in English whenever I want casually and if I want formally, to be able to have a stable and direct communication with the language in both ways.

R: And do you think you are able to speak like that now?

S14: I'm trying to. I speak a lot to myself, to my friends so I practise but I want to always improve.

R: Great. You've also ticked the options that you watched videos and movies only for leisure. Can you give me some details?

S14: Yes, he is the most famous YouTuber who is now fighting for his life to maintain his lead, PewDiePie, 75 million subscribers and competes with a channel called T-series, an Indian channel. But they are cheating because to create a YouTube account in India you have to first subscribe to this channel, so they tell you, if you want to go on YouTube subscribe to us first, and this is cheating.

R: And who is he, what kinds of video does he make?

S14: He makes all kinds of videos. Once he raised money for a charity, for example very recently he raised money for children who are going through hard times in India. He does meme reviews and funny videos. He has his own series called "pew news" where he tells us the latest internet news.

R: And, in general, do you watch videos with subtitles?

S14: No, without subtitles and also when I watch movies, I don't use subtitles.

R: Why?

S14: I don't know. I'm used to it. And I can understand what they say.

R: Do the games you play have subtitles?

S14: Not in Greek. But yes, in some you can also read. In others, there are not even English subtitles.

R: What about reading in English? I see you've ticked some things here you did for homework.

S14: Yes, it's some articles we had to read for school.

R: Do you do that often?

S14: Yeah, our teacher gives us homework like that. And okay songs and these things on social media, like everyone, we all do it all the time. But that's just for fun.

R: And what about writing in English? Do you chat in English frequently?

S14: Yes, with my friends a lot mainly when we play games but not only then.

R: Do you have relatives who speak in English?

S14: No.

R: Have you travelled abroad?

S14: Yes, yes not to England or some other English-speaking country. I have travelled to Germany, Czech Republic that's it so far.

R: Was it recently?

S14: Last year for Christmas to an aunt of mine who lives there.

2.2 Example-transcript S14 (Time 2)

R: You told me last time that you have a YouTube channel, that you make videos, that you play games, that you speak to yourself and your friends in English, and that you do all that for fun in

your spare time. Has anything changed from the previous time, are you doing something less often as before or have you started doing something new?

S14: I changed my channel from English to Greek, because I didn't sound natural, I had to change my accent a bit, which I am not yet able to do. For example, I haven't spent time in an English-speaking country to get used to the accent and see exactly how it is. Until very recently I was speaking in English but because I realised that the Greek accent didn't help the views much, I started making videos in Greek to see if I would like it, to see what video I want to make and then maybe in the future I will continue with the English videos.

R: Are you doing something you didn't do before?

S14: Something I didn't do before… This is quite relevant I would say. I think I have increased how much I write in English comments on Instagram.

R: Yes, I see you've ticked that in the questionnaire. And do you chat in English with others on Instagram?

S14: At the moment, I post comments. I follow some gaming accounts.

R: And what would you say is your favourite out-of-school activity in English at the moment?

S14: In English?

R: Yes.

S14: (name of game)

R: Excuse me?

S14: "Video game"

R: Ah okay.

S14: I like to play on my "pc".

R: When you play, do you read in English, speak in English, and listen to English?

S14: A little bit of everything. There is the group chat where we write to each other, comments. I read in English because the game sometimes gives instructions to follow steps. But I rarely speak in English there, in the voice chat there, because everyone out there is behind a "mic" and doesn't know who they are talking to. They are all strangers to each other. It makes them a little, how to say it, not weird, a little more... basically yes, weird. It's like you feel that you are safe behind anonymity, and you can do whatever you want, they may also say some things that they don't mean in the game.

R: So, you don't speak to other gamers.

S14: I prefer not to talk. I'm just outside with the "mic" off and I'm laughing at what they say inside, and I'm mimicking their voices.

R: In general, you like to mimic others' speech in English?

S14: Yes, I take lines from my favourite movies and repeat them and mimic the voice of the actor.

R: Ah yes, I remember you also said that last time.

S14: I often speak to my friends like that.

R: And do you speak with your friends during gaming?

S14: Yes, with my friends I don't mind. It's so much easier to talk to them in English because the whole game is in English. So, all the words there are in English and it's considered more practical to use the words in the game because we don't need to translate.

R: And do you do that often?

S14: Not during the week, because we have mums. So, it's mainly during the weekend. But okay, sometimes she'll let me play for an hour a day. But I speak in English all the time.

R: And what about practising speaking for homework?

S14: No, it's not for homework. Nobody told me to do it. It's for fun.

R: As for the other activities, I see here it's the same as last time. Watching movies, videos, listening to music. Do you still watch mainly without subtitles?

S14: Yes, yes, it's the same. It's very common for me.

R: Where do you speak in English more: in your language school, in the morning school or in your free time?

S14: I have to say in the video games. Because over there you are essentially forced to talk to someone to communicate with them about how to play in the game. Of course, one problem you face if you live in Europe is that in order to have the best connection, you enter European servers, and it could be that not everyone speaks in English. You might find a Romanian, a German... And as not everyone here in Greece knows English, there are some out there who don't know English.

R: So, do you also enjoy speaking in your free time, or do you also enjoy speaking in English at your school? And why?

S14: I also enjoy it both there and here. Here it's an environment that encourages speaking in English a lot. It's forbidden to speak Greek in the classroom. Forbidden in quotation marks. But it's for our better education.

R: Are there any differences in the way you speak in the school and in your free time?

S14: Here and especially in the exams, I try to be very formal, very formal in my speech and to use as many adjectives as I can and expressions. When I'm with my friends, it depends. If I want to talk to a foreign friend about a subject, then I will speak in a normal way. I will also try to speak with an American or British accent. If I want to joke around, I will start speaking with a hillbilly American accent.

R: And the way you spoke to me in English, in the activities, is it similar to the way you speak English to your friends, the way you speak in the exams, in a formal situation, or a combination or none of the above?

S14: "Because we are talking about a research here", because we are talking about research here, we can't.... I don't think I should speak informally, because I have to take your work seriously and what you do, your efforts, so I try to be formal, but I'm not the most formal person in the world. I speak in a normal way, in a "straight" way, so maybe a combination.

R: Do you remember if that was the same the previous time you did the activities with me last month?

S14: Yes.

R: What are your most important reasons for learning English in the language school?

S14: I like the language, this is the most important reason for me, and also, two languages are required for a Master's. The other language that I'm learning is French and let's be honest, Master's or no Master's, English is necessary in our everyday life. English is everywhere, even in Greece.

R: How are you feeling about your English at the moment?

S14: I really like to speak in English. As I said before, I find it a very beautiful language. I like that it's simple and everything is so simple in it. There are rules with few exceptions, and whatever these exceptions are, they are always categorized, and you always know exactly what they are.

R: Do you have any anxiety or fear?

S14: My biggest stress is the accent. Because I have heard so many Greeks speak in English with a Greek accent and it doesn't sound nice to me. I feel that the Greek accent of English is an insult to the language. So, I'm trying to work on that.

R: And how do you imagine yourself in the future? Do you have a future goal in terms of speaking?

S14: I really don't want others to understand I am a Greek. I don't want to sound like them, I don't want to betray my favourite language.

2.3 Example-transcript S14 (Time 3)

R: What is your relationship with English at the moment?

S14: It's a close, very close relationship. I would characterize it as a second mother tongue, I use it every day, whether I write or speak or do anything. Sometimes, I even think in English. I mean, sometimes I start thinking in Greek and then I end up thinking in English.

R: And what about your future goals? Have they changed since last time we talked?

S14: Not really. I feel comfortable with my goals because I believe after so many years of studying at this school, I think that thanks to the good education given by all the teachers here and all those who contribute, I would say that I am so used to the language that I am not anxious to use it under any circumstances.

R: How do you feel about learning English at (the morning) school at the moment?

S14: I don't like it. They don't have.... there is no proper system in Greece. They've been teaching us the present simple since the third grade. They are not able to educate us at any level beyond the simple tenses.

R: Is it different from how you feel about learning here? (evening language school)

S14: Here, the teachers are all very good and they encourage knowledge at every level. When it's a grammar exercise, we can discuss it. So, we might pause and even if it's a completely "random" sentence, a random sentence, and has nothing to do with what we do in class, we might pause and talk about it if it's important.

R: And is that different from how you feel about using English in your free time?

S14: Usually inside the class we speak about specific things, we have to be more sophisticated. So, in my free time, I feel more "free", free to talk about whatever I want, and however I want.

R: As I can see in the questionnaire, you have been carrying out similar activities like last time. Has anything changed?

S14: No, it's the same. Maybe I watched more movies because it was Carnival, and we had more time.

R: Do you still watch without subtitles?

S14: Yes, it doesn't change.

R: Why?

S14: I really like the language and listening to it. I think it's a simple language that has the absolutely necessary things in it and I also like the way it sounds. I think it's one of the most beautifully sounding languages in the world, especially the British, the American is a bit "slum".

R: And I can see here that again you read articles online. What about the other reading activities? Can you give some more details?

S14: When I read these articles, it's mostly for homework, it's usually because afterwards I have to do an exercise. When I play games, or I read lyrics or what other people write on Instagram and YouTube, that's not homework. Okay, I see new words that maybe I didn't know before, but it's not to do an exercise.

R: And do you do all this frequently?

S14: Yes.

R: Is there anything you did since the last time we talked, but which you don't do as frequently? Something, for example, which you did once or twice?

S14: No, I don't think so.

R: When was one time you enjoyed speaking in English the most? And why?

S14: I have two moments. The first is when I was in primary school, second grade, and I managed to have a whole conversation in English with a woman from Denmark and the second is when I had the opportunity to show the other delegates at "MUN" how wrong their views were.

R: Was that this year?

S14: Yes, we went there last month I think with other kids from the school and Mrs <name of teacher>.

R: And does that take place often?

S14: I don't know. I went there once.

R: And do you give speeches in English? Only in English?

S14: It's not... Speeches okay, it's more like arguments. Yes, speeches. Everything is in English.

2.4 Example-transcript S14 (Time 4)

R: Since the beginning of the year, have you been attending the same hours of English classes per week?

S14: Yes.

R: And are you still attending the same class as before?

S14: Yes.

R: What is something you did a lot in your free time in English at the beginning of the year that you don't do now as much?

S14: Studying. (laughter). No, okay, I'm kidding.

R: In your free time...

S14: In my free time… If I had to choose something that I did at the beginning of the year and now I don't do, it would be expressing my opinion too many times. I remember I used to write my opinion below YouTube videos, I wrote my point of view, but then I realized that it's not worth it debating on the internet because there will always be a conflicting opinion, always some idiot who won't know what we're talking about, so I just stopped trying.

R: And something you didn't do before but started later in the year?

S14: Communicating with many nationalities because when you're bored, and you don't have many friends, you enter random chatrooms.

R: And do you speak to them or write to them?

S14: Both.

R: And do you continue talking with your friends in English?

S14: Yes, this doesn't change. And on my own, I don't stop talking.

R: And what have you been doing in English lately in your free time? Has anything changed from last time we talked?

S14: "No, I still use my mobile and my PC in the same way as always. On my PC, I just play games and it's not something different that I encounter every day, it's just the same games, the same instructions, the same things written on the screen every time. So, it's the same thing every day, but on my mobile I will, you know, talk with guys online like in English, about different things, so it has more variety for me"

R: "Perfect. And since you're talking in English, I will ask you in English"

S14: "Oh sorry!"

R: "It's okay!"

S14: "Oh, you see what I mean when I say that ..."

R: "Yeah. What's one thing you would do to practise speaking more if you had the chance?"

S14: "Travel either to England or in America"

R: "And what about now while you're in Greece?"

S14: "ah, not travelling. Maybe but..."

R: “In your daily life I mean”

S14: “In my daily life. Well, it is a really challenging question because you always tend to think about your daily activities and what you can do and can’t do. I can’t seem to find something but if it was something that I would like to do is to have even more email friends where I would like to talk to them via Skype”.

R: From all the activities you ticked in this questionnaire, would you say there are things you don’t do as frequently, but rather once in a while?

S14: No, these things are like my routine.

R: Is there something you didn’t tick because you only do it once in a while?

S14: I don’t think so. For example, I never write a blog. I’ve never written one.

R: And what about practising speaking for homework, for an exam?

S14: No, we don’t have any exams soon, so there is no need to study for that.

R: And in the movies or TV series or videos you watched since the last time we talked did you use subtitles?

S14: No, no I prefer without.

R: What is the most important reason you are having contact with English now?

S14: Firstly, globalization. Secondly, it’s a hobby. And the fact that through globalization, the world comes closer. And since Greece is a country which, let's be honest, doesn’t have the infrastructure to maintain its population, young people are all looking to find a country that suits them more and because this place isn’t enough for them, sometimes they leave.

R: And what about you? How do you imagine yourself in the future?

S14: I would really like to do a master’s as I had said, and English would be very important for my academic career. And also I would like to start my own company when I finish.

R: The way you spoke in the activities with me this time, did it resemble the way you would speak in a formal situation, like an exam, the way you usually speak with your friends or a combination? Or none of these?

S14: I think it’s a combination. As I said, I don’t want to be too informal nor too formal.

R: And was it the same as last time?

S14: Yes, I think so.

R: What do you think has helped you speak English so well?

S14: I think it’s the very frequent contact with the language as I see it every day on the internet, I use many English expressions in my daily life, and this is something that helps you speak the language better.

R: Do you think that your speaking has improved throughout the year?

S14: I think so and to be honest it’s better than my writing. I have made a lot of progress because I think I have spoken more this year than other years, I also had to go to a United Nations seminar,

MUN, so there I had to learn to speak better to be able to express opinions. In general, now instead hesitating, I'm "fluent", I am very…

R: "Fluent"

S14: I don't the word in Greek.

R: Fluent. When you speak, I noticed that you use words such as "well", "so", "you know", "I mean", "like". How do you think you have learned how to use these words when you're speaking?
S14: You have to learn to say these things in order to be able to speak the language because otherwise your sentences are nothing but unconnected structure which may not be coherent, they may not make sense in some cases. So, it's mandatory to say them and learn to be able to speak the language correctly. And I think I learned them along the way.

R: From where?

S14: From everyday use, from studying a lot especially earlier on when I started studying English.

R: So, it's from studying in this school?

S14: Yes, from the language school mainly

R: How did you feel about participating in this research?

S14: It was really nice research, I liked the subjects, I liked the videos, I hope I helped.

R: Which part of the speaking activities did you like the most?

S14: Here I am torn between the photos and the personal questions, because in the photos I had the opportunity to show off when describing a photo, while in the personal questions I liked that finally someone asked my opinion on something.

3. Closing (repeated at each time-point)
Thank participant and remind them of next stage in data collection.

Appendix C. DM data processing

C1. Content of instructional material selected for DM coding.

Table 1. Content of Instructional Material selected for DM coding.

School (class level)	Type of material	Title	Sections processed
School A (lower level)	Textbook	Oxford Preparation and Practice for Cambridge English First for Schools: Exam Trainer with 7 Practice Tests, Oxford University Press (2017)	• Audio transcripts • Speaking practice sections
	Leaflet	"Expressions for speaking and writing"	• Lists of words/ expressions
School A (higher level)	Textbook	Gold Experience C1 Advanced, Pearson Education Limited (2018)	• Audio transcripts • Speaking practice sections
School B (lower level)	Textbook	First for Schools Trainer: Six Practice Test with answers and teacher's notes, Cambridge University Press UCLES (2014)	• Audio transcripts • Speaking practice sections
	Leaflet	"Speaking"	• Speaking practice questions and sample answers
School B (higher level)	Textbook	Navigate Advanced C1 level, Oxford University Press (2016)	• Audio transcripts • Speaking practice sections
School C (lower level)	Textbook	Venture into First for Schools, Oxford University Press (2017)	• Audio transcripts • Speaking practice sections
School D (higher level)	Textbook	Gold Experience C1 Advanced, Pearson Education Limited (2018)	• Audio transcripts • Speaking practice sections

C2. DM tokens with discursive/pragmatic, canonical and unclear functions.

Table 2. Number and percentage of tokens with discursive/pragmatic, canonical and unclear functions in the discourse of student-participants (N=52), teacher-participants (N=4) and in instructional material for each marker and in total.

Function		**N (%) of tokens**										**Total**
		so	***well***	***just***	***like***	***I don't know***	***actually/ in fact***	***you know***	***I mean***	***kind of/ sort of***	**General extenders**	
Discursive/ pragmatic	Students	383 (76.6)	327 (89.6)	108 (92.3)	77 (12.0)	62 (51.7)	51 (45.1)	53 (88.3)	29 (85.3)	35 (62.5)	81 (95.3)	**1,206** (57.6)
	Teachers	745 (78.4)	45 (38.8)	170 (74.9)	0	14 (34.1)	29 (34.9)	153 (89.5)	136 (92.5)	127 (77.0)	31 (75.6)	**1,450** (61.7)
	Material	441 (64.5)	296 (69.0)	160 (77.3)	10 (2.2)	2 (14.3)	83 (58.0)	49 (64.5)	43 (84.3)	12 (19.7)	55 (100.0)	**1,151** (52.7)
Canonical	Students	106 (21.2)	38 (10.4)	9 (7.7)	558 (86.6)	58 (48.3)	62 (54.9)	6 (10.0)	3 (8.8)	20 (35.7)	4 (4.7)	**864** (41.3)
	Teachers	168 (17.7)	71 (61.2)	57 (25.1)	410 (100.0)	27 (65.9)	54 (65.1)	18 (10.5)	10 (6.8)	38 (23.0)	10 (24.4)	**863** (36.7)
	Material	239 (34.9)	126 (29.4)	47 (22.7)	453 (97.6)	12 (85.7)	57 (39.9)	25 (32.9)	5 (9.8)	46 (75.4)	0	**1,010** (46.2)
Unclear	Students	11 (2.2)	0	0	9 (1.4)	0	0	1 (1.7)	2 (5.9)	1 (1.8)	0	**24** (1.1)
	Teachers	37 (3.9)	0	0	0	0	0	0	1 (0.7)	0	0	**38** (1.6)
	Material	4 (0.6)	7 (1.6)	0	1 (0.2)	0	3 (2.1)	2 (2.6)	3 (5.9)	3 (4.9)	0	**23** (1.1)
Total	Students	**500**	**365**	**117**	**644**	**120**	**113**	**60**	**34**	**56**	**85**	**2,094** (100.0)
	Teachers	**950**	**116**	**227**	**410**	**41**	**83**	**171**	**147**	**165**	**41**	**2,351** (100.0)
	Material	**684**	**429**	**207**	**464**	**14**	**143**	**76**	**51**	**61**	**55**	**2,184** (100.0)

C3. Pragmatic and canonical functions of the 10 DMs under examination in learners' discourse, teachers' discourse and the content of instructional material.

Table 3. Pragmatic and canonical functions of *so* (Müller 2005; Buysse, 2012).

Function		Description	Example	Use by learners	Use by teachers	Presence in material
1.	Textual: Indicating a result	"in a sentence X so Y, it can thus be paraphrased as: 'state of affairs Y is the result/consequence of state of affairs X'" (Buysse, 2012:1768; Müller, 2005).	<S2> [...] I made instagram and facebook because I wanted to communicate and chatting and chat with my friends.. because I was younger and I couldn't go out a lot **so** I couldn't see my friends as much as I wanted <\S2>	✓	✓	✓
2.	Textual: Introducing a summary	"introduces a segment that can sum up (a part of) the prior discourse" (Buysse, 2012:1771).	<S14> okay um on picture a we can see a group of friends having fun around a video game.. for some reason they have controllers on a Mac they can't play even games but anyway.. on the second picture we can see a group of friends they are probably a band.. although we can't see the name of the band anywhere like on the drums.. ehm they're also having much fun from what I can see uh: okay **so** both pictures illustrate people like having fun with each other [...] <\14>	✓	✓	✓
3.	Textual: Introducing a section of the discourse	It is used to initiate the speaker's first turn "in (a section of) the conversation" (Buysse, 2012:1771).	<R> compare them and then tell me why you think these people enjoy these activities <\R> <S11> okay **so** in the first picture I can see three guys uh grown men actually who are playing a computer game on their ah imac I think it's football? <\S11>	✓	×	✓
4.	Textual: Indicating a shift back to a higher unit of the discourse	It is used to signal that the speaker "shifts the conversation back to a higher textual level, either after a brief interruption by or an exchange with	<S14> [...] uhm on the second one- clip eh photo sorry I use streaming terms uhm **so** on the second one we can see a family I don't know if it's a family [...] <\S14>	✓	✓	×

Function		Description	Example	Use by learners	Use by teachers	Presence in material
		the interviewer or after a turn-internal digression" (Buysse, 2012:1772).				
5.	Textual: Introducing a new sequence in the narrative or a new step in an explanation	Introduces "a new sequence in a narrative or a new step in an explanation [...] *so* starts a new sequence within the turn" (Buysse, 2012:1773).	<S2> [...] the dog realised that that girl that the man had an eye contact saw he- she had a a problem with her car he took his bag and ran towards to the girl **so** eh the man ran after the dog and me-met the girl <\S2>	✓	✓	✓
6.	Textual: Introducing elaboration	Introduces a segment which elaborates on a preceding segment and provides further specification, justification and description (Buysse, 2012).	<S7> ehm there were some people and it basically showed what happens in the twenty-first century which everyone.. everyone has the eh like they were perfect and they tried to be perfect but they're not really perfect **so** it's just they just pretend [...] <\7>	✓	✓	✓
7.	Interpersonal: Drawing a conclusion	Connects two propositions, "the first of which serves as the ground for the speaker to posit a claim in the second" (Buysse, 2012:1768).	<R> great eh which would you rather do? which of the two? <\R> <S1> I'm not fan of video games ehm and I really love music **so** I would plan.. for the second one <\S1>	✓	✓	✓
8.	Interpersonal: Prompting	"gives an additional cue for the hearer that s/he may take over the floor" (Müller, 2005:85; Buysse, 2012).	<S5> well.. it depends on the sport I eh prefer eh to watch football and eh basketball because I can play and I- my father is very eh is very.. I don't know how to say it eh enjoys seeing eh football **so...** <\5> <R> ah he's a fan <\R> <S5> yes so I watch it with him [...] <\S5>	✓	×	✓
9.	Interpersonal: Holding the floor	"indicate[s] the speaker's desire to hold the floor" (Buysse, 2012:1770).	<R> okay.. and what's your favourite means of transport? <\R> <S8> I don't know if it's like transport but I like bicycle **so:..** I usually use my bicyc- bicycle to go everywhere eh I- I go to my grandma or here in the centre <\S8>	✓	✓	×

Function		Description	Example	Use by learners	Use by teachers	Presence in material
10.	Interpersonal: Introducing a request	Prefaces a request (Müller, 2005).	<T1> [...] okay **so** use more friendly expressions because that sort of drops the mark in communicative achievement [...] <\T>	×	✓	×
11.	Interpersonal: Introducing a question	Prefaces a question (Müller, 2005).	<T2> [...] **so** who wants to answer this one? <\T2>	×	✓	✓
12.	Interpersonal: Introducing/presenting new information	Introduces neither a question nor a request but presents new information, a new task, piece of advice or suggestion etc. (present data).	(teacher finishes writing on the board) <T1> **so** here's the title everybody [...] <\T1>	×	✓	×
13.	Interpersonal: Introducing repetition	Introduces a repetition either of the speaker's preceding segment or the interlocutor's utterance (present data).	<T1> [...] and after that say which way you think is more effective.. **so** which way is more effective.. but when you discuss both ways what do you have to do? [...] <\T1>	×	✓	×
14.	Textual-interpersonal: Signalling end of sequence/turn	Signals that a sequence or turn has come to an end possibly indicating at the same time that the speaker has fulfilled the task of providing a response to the interlocutor. It collocates with "yes/yeah" and/or "yes/yeah this", "yes/yeah that" (present data, but see Müller, 2005:88).	<R> I want you to talk to me about your best friend what he or she looks like and some things about his or her personality <\R> <S6> okay eh she eh she is blond and she is as tall as I am she doesn't wear glasses and her personality I think that eh she is very eh happy person generally and- but she gets nervous very often eh but eh she is very kind and very good student eh **so** yes <\S6> <R> And have you been friends for a long time? <\R>	✓	×	×
Canonical: Expressing purpose (meaning "so that", "in order to"). It is not optional in the structure, but obligatory for the sentence to be grammatically correct (Müller, 2005).			<S3> [...] some people feel lonely some days and they- actually teenagers eh most of them haven't eh don't have friends and most of them have pets **so** they don't feel as lonely as they would feel without a dog or a cat and eh yes <\S3>	✓	✓	✓

Function	Description	Example	Use by learners	Use by teachers	Presence in material
Canonical: A degree adverb that modifies adjectives and other adverbs (Cambridge dictionary, 2020).		<S14> [...] if you don't say something and you just say oh you're **so** beautiful uhm then they will might end up getting ridiculed by others [...]<\S14>	✓	✓	✓
Canonical: Use with "much" or "many".		<S15> [...] carnival is not **so** much my favourite celebration [...] <\S15>	✓	✓	✓
Canonical: Use in the expression: "I think so"		<T1> [...] and you didn't think so? <\T1>	×	✓	✓
Unclear: It was not possible to assign a function because, for example, "the context was not clear enough due to unfinished utterances or due to unintelligible passages" (Müller, 2005:87), or the token appeared in word lists.		<S26> [...] I'm actually getting angry and I'm trying to help these people because I have been to their situation **so**- and I think it's really really bad uhm to bully some people <\S26>	✓	✓	✓

Table 4. Pragmatic and canonical functions of *well* (Müller, 2005; Aijmer, 2011; Buysse, 2015).

Function		Description	Example	Use by learners	Use by teachers	Presence in material
1.	Textual: Planning of an upcoming utterance	"reflects the speaker's planning efforts as well as a desire to hold the floor" (Buysse, 2015:70; Aijmer, 2011).	<R> and what's your favourite means of transport? <\R> <S11> uh: I would say: yeah I would say that my favourite means of transport is uh.. **well** walking <\S11>	✓	✓	✓
2.	Textual: Reformulation, correction, topic change, restart	"signal[s] a need to reformulate an utterance that has just been produced, which may – but need not – also entail a topic shift" (Buysse, 2015:72; Aijmer, 2011).	<R> okay explain to me what you saw <\R> <S10> okay eh in this video there were a couple of people eh that were addicted by social media eh I.. **well** they they actually whatever they were doing during their day they take they take a photo of it [...] <\S10>	✓	✓	✓
3.	Textual: Introducing a response to a question	"allows the speaker to pause briefly before responding to the interlocutor's question or request, in which case *well* points forward to an upcoming answer" (Buysse, 2015:74; Aijmer, 2011).	<R> now I want you to describe to me what you see in these two pictures <\R> <S1> hmm eh **well** eh both pictures illustrate people hav- eh- maybe they are on holiday or something [...]<\S1>	✓	✓	✓
4.	Textual: Introducing stages in a narrative	"mark[s] stages in a narrative [...] *well* signals the start of a new episode or of the narrative altogether [...] moving to the main story, introducing the next scene in a story and providing a conclusion to a story description" (Buysse, 2015:62; Aijmer, 2011; Müller, 2005).	<R> okay what did you see? <\R> <S11> uhm well evidently the video was revolving around a dog and his owner.. uh **well** the man at the beginning he saw a woman who he probably he probably had a crush on or something and [...] <\S11>	✓	×	✓
5.	Interpersonal: Introducing an opinion	"serves to mitigate the speaker's opinion or the force of the speaker's upcoming statement" (Buysse, 2015:77; Aijmer, 2011).	<R> did you go out did you go in a group? <\R> <S24> well yes I I took part in a parade etcetera uhm well in a small group it was fun but **well**	✓	✓	✓

Function		Description	Example	Use by learners	Use by teachers	Presence in material
			nothing special you know every year we participate so nothing special <\S24>			
6.	Interpersonal: Marking disagreement	"downtones dispreferred responses such as disagreement, skepticism, and criticism" (Buysse, 2015:78; Aijmer, 2011).	<T1> how many do you think out of twenty-four how many do you think are the past tenses? a rough estimation.. don't count them just estimate roughly <\T1> <S> nineteen <\S> <T1> **well** it's fifteen <\T1>	×	✓	✓
7.	Textual-interpersonal: Introducing a response to a question with mitigating effect	This is a combination of functions (3) and (5). The speaker uses well to introduce their response to a question and at the same time mitigate their opinion. The marker usually collocates with "not", "I think I'm not", "I think it's not", "I don't think so", "it depends", "to be honest", "to be frank", "to tell you the truth" (present data, but see Müller, 2005:122).	<R> perfect.. some people say that dogs are man's best friend do you agree? <\R> <S8> ah **well** to tell you the truth I don't like a lot eh pets but yes it- dogs are some- are pets that I I like because they help you wi- it's like this video [...]<\S8>	✓	×	×
Canonical: Adverbial use (Müller, 2005).			<S18> [...] when she didn't do **well** eh they were laughing at her [...] <\S18>	✓	✓	✓
Canonical: Meaning "in addition", i.e. "as well" (Müller, 2005).			<S14> [...] so I guess that the second one is more beneficial for them **as well** uh but we can't say that [...] <\S14>	✓	✓	✓
Unclear: No context to enable the assignment of a function.				×	×	✓

Table 5. Pragmatic and canonical functions of *just* (Aijmer, 2002; Beeching, 2016).

Function	Description	Example	Use by learners	Use by teachers	Presence in material
1. Textual: Planning	Appears in hesitation surroundings "to fill a pause before the speaker corrects himself" (Aijmer, 2002:156).	<S22> [...] and then it shows him looking at a girl which who also looked behind and then this man **just** eh eh we- ehm sat uh sat down somewhere on the grass [...] <\S22>	✓	×	×
2. Interpersonal: Downtoner	"conveys both its literal meaning of "exactly", "only", which narrowly delimits the extent of the FTA [face-threatening act] and its conventional implicature "merely" (Brown & Levinson 1987: 177) [...]" (Aijmer 2002:159).	<R> are you going to do anything special this weekend? <\R> <S2> ehm I'll go to the parade but **just** for a walk I won't be in the parade <\S>	✓	✓	✓
3. Interpersonal: Emphasizer	"to emphasise illocutionary force and to strengthen the speaker's commitment to the proposition" (Aijmer, 2002:170). Also, "it is intensifying and can be experienced as pushy, aggravating, or exaggerative" (Aijmer, 2002:174).	<S15> [...] so on Saturday I remembered that I- I spent all day reading one book, w- because I **just** loved it and I couldn't get my hands off it <\S15>	✓	✓	✓
Canonical: Restrictive adverb, particulariser (meaning "only", "exactly") (Aijmer, 2002).		<S16> it's all about small kindness kindnesses.. eh if you you can make someone stay better eh by doing something very simple **just** like this [...] <\S16>	✓	✓	✓
Canonical: Temporal adverb (meaning "just now", "just about") (Aijmer, 2002).		<S39> [...] and wrote eh at a tag that eh he was riding his bike for very long but actually he **just** got there with the helmet on took a picture and then left <\S39>	✓	✓	✓

Table 6. Pragmatic and canonical functions of *like* (Underhill, 1988; Andersen, 2000; Müller, 2005; Beeching, 2016).

Function	Description	Example	Use by learners	Use by teachers	Presence in material
1. Textual: Introducing an example	Introduces an example (Müller, 2005).	<S37> [...] we can actually- we can talk to each other but when I go out and **like** go for a walk with him or play something with him he helps me feel relieved and more free or I don't know <\S37>	✓	×	×
2. Textual: Introducing an approximation	Marks an approximation and can be used "both with numerative and non-numerative constituents" (Beeching, 2016:130).	<S14> [...] the destination between a school and a- a house is you know ginormous you would take **like** forty minutes to get there <\S14>	✓	×	✓
3. Textual: Focuser *like* – Illustrating	Introduces new and/or significant information (Underhill, 1988). It "highlight[s] or emphasise[s] a statement" (Magliacane & Howard, 2019:75). It can be followed by metaphors or hyperboles (Andersen, 2000).	<S10> I don't really like taking part in the groups because even though it- it looks fun nowadays it's **like** really crazy yeah.. people get crazy <\S10>	✓	×	✓
4. Textual: Introducing an explanation, reformulation or alternative term	Introduces "an explanation of the information" (Müller, 2005:216), an "explanatory reformulation" (Müller, 2005:217) or an "alternative term" (Müller, 2005:218).	<S15> [...] because it's it has also a sentimental value because when I was really really young when I was **like** in primary school my father used to take me from school <\S15>	✓	×	×
5. Textual: Quotative *like*	"it can be used not only to introduce speech which has actually been uttered but also thoughts or feelings" (Müller, 2005:202; Andersen 2000; Beeching, 2016)	<S15> [...] whenever someone says me that I play the guitar or the piano I'm **like** oh wow I don't know.. when someone plays a musical instrument I- it- it feels like he's more.. he's a better person I don't know <\S15>	✓	×	✓
6. Textual: Hesitation	Occurs together with hesitation phenomena (filled and unfilled pauses). The speaker might be searching for	<S10> and uh maybe there was a girl with her boyfriend and that makes the other one they're with ehh feel embarrassing or **like** um yeah and ... <\S10>	✓	×	×

Function	Description	Example	Use by learners	Use by teachers	Presence in material
	what to say next (Andersen, 2000; Müller, 2005).				
7. Textual: Learner specific use	The marker is used in a syntactically erroneous context because what precedes or what follows is not grammatically or syntactically accurate or a word might be missing (e.g. "than", "the"). Although the marker might signal a certain function (e.g., illustrating or giving an example), these usages were categorised under learner-specific use, because the learner might be signalling their uncertainty about their language choice, they might be pointing to their language use (e.g., that they are using an idiom) or buying their time to remember or produce a linguistic item (present data).	<S10> [...] and I think that uh you eh playing music you can express your feelings eh more more **like** with speaking words <\S10> <S14> anyway uh it is.. so let's call her Shirley uh who does the first shot with a- with a bow and the arrow fails miserably on the second one she hits **like** bullseye straight to the centre and uhm on the third one she takes a risk by trying to shoot an apple <\S14>	✓	×	×
8. Textual: Ambiguous function	The marker might signal two functions simultaneously (e.g. hesitation and example, or example and explanation, see S35) (present data).	<S35> I believe that should stop because eh it's not that healthy **like** you're talking to someone that knows you but you're basically showing them your other side that is not that real <\S35>	✓	×	×
Canonical: Verb		<S2> although I I **like** the idea of camping [...] <\S2>	✓	✓	✓
Canonical: Preposition		<S1> I believe that I'm a shy person so I won't become **like** that <\S1>	✓	✓	✓
Canonical: With the verbs "look", "sound", "feel", "taste", "seem".		<S6> [...] they eh: look **like** they're happy [...] <\S6>	✓	✓	✓
Canonical: It introduces an example and "could be glossed as 'such as'" (Beeching, 2016:127). It is different from the pragmatic function (1) "introducing an example", because in its canonical function it is not syntactically optional and cannot be omitted from the sentence without changing the grammaticality of the sentence.		<S8> [...] you can buy anything you want during the trip uhm **like** cupcakes or chocolate [...] <\S8>	✓	✓	✓

Function	Description	Example	Use by learners	Use by teachers	Presence in material
Canonica: Structure “it + be + like”.		<S8> [...] because they help you wi- it’s **like** this video they help you with your life [...] <\S8>	✓	✓	✓
Unclear: It was not possible to assign a function because, for example, the token appeared alongside reformulations, repetitions, or in word lists.		<S15> [...] she is in front of an audience which is **like**.. they seem to be rich people and eh who are having fun <\S15>	✓	×	✓

Table 7. Pragmatic and canonical functions of *I don't know* (Aijmer, 2009, 2014; Baumgarten & House, 2010).

Function	Description	Example	Use by learners	Use by teachers	Presence in material
1. Textual: Speech management or coherence signal – Choice	It is used to "gain time for planning ahead". It has the structural function of "filling a gap in the discourse, signalling that the speaker does not know what to say yet". It is in medial position (inside the turn) pointing "neither forwards nor backwards" (Aijmer, 2009:163).	<R> okay what did you see in this video? <\R> <S13> okay ehm it is from the movie hunger games.. the first one.. and there is a woman who wants to show her abilities in **I don't know** this kind of sport [...] <\S13>	✓	✓	×
2. Textual: Speech management or coherence signal – Change	The marker appears in medial position, around dysfluencies, e.g. self-repair or self-interruption. Using the marker, "the speaker changes the direction of his or her talk in the middle of the turn and restarts" (Aijmer, 2009:163)	<R> your cousin speaks Greek <\R> <S5> yes but eh four years I- I don't thi- I d- **I don't know** she lives in eh <\S5> <R> Germany <\R> <S5> yes eh they they live because and eh the family eh in German so we can't... <\S5> <R> but but do you speak German as well with him or her? <\R>	✓	✓	×
3. Textual: Hesitation	It introduces a turn or utterance (therefore, is in initial position), while at the same time hedges its content and signals hesitation (Aijmer, 2009)	<R> what do you think about this lifestyle? <\R> <S28> ehm **I don't know** some like this that they that others eh like their pictures eh this is why they do it I think [...] <\S28>	✓	×	×
4. Interpersonal: Hedging and politeness	It is used "to convey to the hearer(s) that the speaker is avoiding an unequivocal stance and a fully committed statement" (Baumgarten & House, 2010:1196). The speaker "avoids expressing an opinion directly [...] thus avoiding disagreement and protecting his or her positive face needs" (Aijmer, 2009:160). It is in	<R> it's a bit.. isn't it a bit more dangerous? <\R> <S15> **I don't know** I like danger.. I mean I-I think that if we don't risk we won't appreciate this-this... <\S15> <R> yeah otherwise it's boring [...]<\R>	✓	✓	✓

Function	Description	Example	Use by learners	Use by teachers	Presence in material
	initial position, at the beginning of an utterance.				
5. Textual-interpersonal: Floor-yielding or topic-closing	"serves to emphasize the completion of the utterance or turn" and open up the conversational floor to the interlocutor, even if the speaker continues with their contribution after *I don't know* (Baumgarten & House, 2010:1196). It is in final position, pointing backwards. It emphasizes "the tentativeness of the speaker's contribution" (Aijmer, 2009:157). It can collocate with "maybe", "I think", "perhaps", "probably".	<S21> [...] and there were three bullies and one of them threw a football at another boy maybe because he was a nerd **I don't know..** and then the other teenager eh helped him <\S21>	✓	✓	✓
6. Apologetic or defensive attitude	It is in initial position, introducing the speakers turn or utterance and at the same time signalling "an apologetic or defensive attitude to the message or to the hearer as well as reluctance or discomfort if the message is embarrassing" (Aijmer, 2009:159).	<R> good.. do you have a dog or a pet? <\R> <S2> no I don't have a pet.. I would like to have a dog but my mum loves dogs but she doesn't want one at her home.. at her house yeah <\S2> <R> it's it's.. why do you think? <\R> <S2> **I don't know** she thinks that I can't take after the dog even though we have a large garden but yeah <\S2>	✓	×	×
Canonical: Single clause construction: when *I don't know* is the verb phrase of a clause that takes as complement a noun or adverb (Baumgarten & House, 2010).		<S21> I would rather go to a fancy hotel because **I don't know** anything about camping <\S21>	✓	✓	✓
Canonical: Main clause in complement clause constructions: when *I don't know* is combined with clause complements, such as wh-clause/if-clause (Baumgarten & House, 2010).		<S19> [...] she did her best and she... **I don't know** how to express it eh: <\S19>	✓	✓	✓
Unclear: There is no context to enable the assignment of a function.			×	×	✓

Table 8. Pragmatic and canonical functions of *actually/in fact* (Aijmer, 2002, 2015; Buysse, 2018).

Function	Description	Example	Use by learners	Use by teachers	Presence in material
1. Textual: Elaboration	Introduces elaboration of the preceding utterance in the form of clarification, justification, addition, even topic shift. It occurs in the left periphery (Aijmer, 2015).	<R> okay what did you see in this clip? <\R> <S26> well uhm it somehow reminds me the previous video uhm well I saw a man ehm **actually** it was a teenager I can say uhm he was walking alone [...] <\S26>	✓	✓	✓
2. Textual: Turn-taking	It introduces the speaker's turn and therefore is in the left periphery. It presents information (Aijmer, 2002).	<R> do you have.. are ther- do you have classmates or people you know that are obsessed with the with their profiles? <\R> <S22> **actually** most of my clanmates have social medias where they send photos to their friends every day <\S22>	✓	✓	✓
3. Textual: Re-start	The speaker starts uttering and then realises that it is not how they want to answer or begin their answer and they use *actually* to re-start. It occurs in the left periphery. It is usually found in an environment of disfluencies (Aijmer, 2015).	<S12> [...] she actually achieved the target but then everyone just ignored her so she decided to try to.. not hit.. **actually** to- to to take their attention and yeah and she did it actually <\S12>	✓	✓	✓
4. Textual: Self-responsive marker	It occurs in the right periphery of the discourse unit and "respond[s] to something in the speaker's own turn". It can also "signal[...] a slight revision on-line of what the speaker has just said" (Aijmer, 2015:125).	<R> really? <\R> <S26> yes it's really I can't explain it it's unbelievable **actually**.. and because I'm a person that I'm always talking to my close friends and to my family and I can say that uhm and they- they have helped me a lot <\S26>	✓	✓	✓
5. Interpersonal: Mild contradiction	It occurs in the left periphery. It "is proceeded by *well*, *yes*, *no*, *but* [...] and is followed by a negated assertion" (Aijmer, 2015:133). It "mark[s] a counterclaim, a correction, or incipient	<S4> ehm perhaps I will see my friends again <\S4> <R> okay <\R> <S4> spend my time with eh.. eh.. eh <\S4> <R> your relatives? <\R> <S4> yes **actually** not relatives <\S4>	✓	✓	✓

Function	Description	Example	Use by learners	Use by teachers	Presence in material
	disagreement with a preceding speaker" (Aijmer, 2002:266).	<R> neighbours? <\R> <S4> yes <\S4>			
6. Interpersonal: Hedging and politeness	It occurs in the right periphery. It is a "politeness marker" and "its contrastive function is weak" (Aijmer, 2002:272). It can also embed a function of "counterexpectation", i.e. "to index a proposition as running against expectations that they feel may exist among co-participants or in a broader context" (Buysse, 2018:32).	<R> you walked okay great and what's your favourite means of transport? <\R> <S12> eh well I really like walking **actually**.. because ehm ehm it's really good ehm way to keep fit <\S12>	✓	✓	✓
Canonical: Emphasizing adverb or intensifier. It is in medial position and inside the scope of the utterance or structure (Taglicht, 2001; Aijmer, 2002, 2015).		<S10> I thought that I had to upload everything I was doing during my day I don't really know why.. I was **actually** addicted <\S10>	✓	✓	✓
Canonical: Evidential adverb: it has "a reinforcing effect on the truth value of the clause or part of the clause to which it belongs (cf. Quirk et al. 1985: 583)" (Aijmer, 2002:256). It is in medial position and inside the scope of the utterance or structure (Taglicht, 2001; Aijmer, 2002, 2015).		<S12> I saw many kinds of people eh that really liked taking photos of themselves but ehm eh didn't **actually** show to others the truth just they tried to ehm show that their life is better than it used to be [...] <S12>	✓	✓	✓
Unclear: There is no context to enable the assignment of a function.			×	×	✓

Table 9. Pragmatic and canonical functions of *you know* (Müller, 2005; Beeching, 2016; Buysse, 2017, 2019; Pettersson-Traba, 2018).

Function	Description	Example	Use by learners	Use by teachers	Presence in material
1. Textual: Editing marker	It "occur[s] at moments when the speaker is looking for the right word or content, or needs to repair a prior sentence" (Buysse, 2017:48).	<S14> [...] I would say it is the most practical one you know you are safer than uh you would be on a motorbi- on a motorcycle uhm you have uh **you know** uhm *TSK* temperature changes I don't know how that is that is in English <\S14> <R> oh <\R> <S14> you know warmers <\S14> <R> ah heating <\R> <S14> heating heating <\S14>	✓	✓	✓
2. Interpersonal: Explicit invitation to make inferences	It is at clause final position and "can explicitly invite co-participants to infer the full implication of the prior segment as "a self-evident fact" (Beeching, 2016:102) given the context" (Buysse, 2017:49). The statements involved "pertain to specific situations that co-participants are expected to be able to relate to" (Buysse, 2017:50).	<R> are you going to do anything special this weekend? <\R> <S1> ehm to tell you the truth I'm not because ehm I was going to go out for Carnival **you know**.. but I have some ehm very important games eh the following weekend and I can't.. so I'll probably stay at home <\S1>	✓	✓	✓
3. Textual-interpersonal: Introducing a proposition linked to the prior discourse as one the co-participant is expected to relate to	It "can introduce a proposition which is (i) a claim, (ii) an event or state in narrative discourse, (iii) an argument to a prior claim, or (iv) background information. In each of these cases the upcoming proposition directly follows on from the prior co-text and you know marks it as one the co-participant should be able to relate to" (Buysse, 2017:43).	<R> would you like to have a pet in the future or you haven't thought about it? <\R> <S24> well I have and yes I'd really love to <\S24> <R> okay <\R> <S24> but **you know** I live in an apartment and eh my mum won't- won't really allow me to have a pet <\S24>	✓	✓	✓

Function	Description	Example	Use by learners	Use by teachers	Presence in material
4. Textual-interpersonal: Attention getting – launching a new piece of information	The marker is at initial position, at the beginning of a turn when the speaker responds to a question by introducing a new piece of information. It differs from function (3) because in function (4) the proposition is not linked to the speaker's prior discourse (Beeching, 2016).	<R> [...] now I would like you to talk to me a little bit about your best friend.. what he or she looks like and some things about his or her personality <\R> <S24> uhm well **you know** the thing is I don't really have a best friend.. eh well I'm- I'm an only child so I- I have many friends [...] <\S24>	✓	✓	✓
5. Textual-interpersonal: Highlighting particular points in the discourse	It "does not introduce an entire main clause but rather highlights a particular element within a clause. This may be a 'given element', which therefore belongs to the co-participant's common ground" (Buysse, 2017:47) "Alternatively, elements may receive focus because they are prefaced with *you know* although they have not appeared in the prior co-text but for which the interviewee merely appeals to the interviewer's knowledge of the world and empathic capacity (Buysse, 2017:48).	<S14> [...] it's pretty far uhm but not like in other countries when where ehm the destination between a school and a- a house is **you know** ginormous.. you would take like forty minutes to get there <\S14>	✓	✓	✓
6. Textual-interpersonal: Elaboration of a preceding concept	"Instead of occurring in between two full-fledged clauses *you know* can also signal that a concept – often consisting of nothing more than a word or phrase – that occurred within the prior utterance is about to be modified. The elaboration can take the form of a clarification [...], a paraphrase [...] or of an example" (Buysse, 2017:46).	<R> okay has this ever happened? <\R> <S10> hmm well yeah but not that serious.. **you know** like joking around mostly but yeah- it yeah.. kind of I would say <\S10>	✓	✓	✓

Function	Description	Example	Use by learners	Use by teachers	Presence in material
Canonical: Verb phrase that takes a complement (Müller, 2005; Buysse, 2017).		<S10> [...] you can have someone to support you when you're in trouble or you have a problem eh: someone that **you know** that will always be with you [...] <\S10>	✓	✓	✓
Canonical: In the expression "as you know".		<S23> [...] and as **you know** a problem shared is a problem halved [...] <\S23>	✓	×	✓
Unclear: There is not enough context to analyse the function.		<S14> (inaudible) **you know** a solid difference of one hundred thousand subscribers <\S14>	✓	×	✓

Table 10. Pragmatic and canonical functions of *I mean* (Imo, 2006; Beeching, 2016; Pettersson-Traba, 2018).

Function	Description	Example	Use by learners	Use by teachers	Presence in material
1. Textual: Concession and nuancing	Usually it is followed by "but" later on in the utterance. "[...] by conceding some counter argument a speaker can avoid sounding too dogmatic or biased and at the same time the proposition can be immunized against counter-arguments" (Imo, 2006:18). The speaker "uses *I mean* to introduce a concession [...] but returns to and justifies her main argument" (Beeching, 2016:188).	<R> did you do anything special during the carnival? <\R> <S10> uh well actually not really because I'm not really into carnival.. **I mean** I like it but uh yeah I don't really like taking part in the groups [...] <\S10>	✓	✓	✓
2. Textual: Introducing elaboration	It introduces a conclusion, explication, specification, clarification, elaboration of what was said before, or a parenthetical aside (Beeching, 2016).	<R> [...] do you like to go out with your friends or stay at home and why? <\R> <S40> ehm well it depends on the time.. **I mean** eh when I am eh when I don't have much time I prefer staying at home and watching a movie.. reading a book but eh if I have eh much free time I prefer going out for a walk with my friends <\S40>	✓	✓	✓
3. Textual: Hedging	It can "soften 'the strength of an evaluative comment' (Erman, 1986: 143; 1987: 199)" (Beeching, 2016:189).	<R> [...] do you like travelling? <\R> <S11> **I mean** I like travelling for relaxing only I don't like going out a lot.. I'm that kind of person [...]<\S11>	✓	✓	✓
4. Textual: Self-repair or reformulation	It "edit[s] spontaneous speech as it unfolds" (Beeching, 2016:185). The marker can appear at final position, after the self-repair or reformulation has occurred (present data).	<S26> [...] so- and I think it's really really bad uhm to bully some people that uhm are not- that they are trying to stand out **I mean** <\S26> <R> yeah I agree <\R>	✓	✓	✓

Function	Description	Example	Use by learners	Use by teachers	Presence in material
Canonical: Verb phrase that takes a complement (Imo, 2006).		<S14> [...] I don't think that some- that most of us really care to fight it.. **I mean** that once you get used to it you don't.. [...] <\S14>	✓	×	✓
Unclear: The context is not clear so as to assign a specific function.		<S52> [...] sometimes she gets *(Greek)* ehm- no- eh she wants to tho- eh some things and these things have to be now- **I mean**... <\S52> <R> she doesn't have patience you mean <\R> <S52> yes <\S52>	✓	✓	✓

Table 11. Pragmatic and canonical functions of *kind of/sort of* (Aijmer, 2002; Kirk, 2015; Beeching, 2016).

Function	Description	Example	Use by learners	Use by teachers	Presence in material
1. Textual: Adjuster word	"it indicates that a particular word or phrase is not fitted to cope with the situation in 'any tidy straightforward style' (Austin 1962: 74)" (Aijmer, 2002:192). It "is an adaptor with the function to do the adaptation of a lexical item to the new instance (Aijmer, 2002:192	<S40> [...] I saw a man who was eating something and eh he saw a girl that he liked and ehm suddenly a dog appeared and he **kinda** did something good.. he gave the dog the thing he was eating [...] <\S40>	✓	✓	✓
2. Textual: Self-repair or pause-filling	"the speaker seeks for the word to use" (Beeching, 2016:158).	<R> would you rather play a game or a musical instrument? <\R> <S14> uh: yeah a game because I'm **kind of** uh I know how to play some notes like on a piano but uh games are better <\S14>	✓	✓	×
3. Textual: Metacommenting	It functions as "a quoting device before a word or phrase that the speaker wants to mark as 'a metaphor of some sort' (cf. Brown & Levinson 1987: 117) [...] It "occurs before words or phrases which are technical, rare, foreign, formal, vulgar, idiomatic, and words which are part of the speaker's own colloquial vocabulary (cf. Holmes 1988a:99)" (Aijmer, 2002:194).	<R> okay okay.. do you like going out or staying at home? <\R> <S11> I'm **kind of** an amb- ambivert ambivert.. I- it depends.. when I'm eh going out with a particular group of friends I like going out.. there are sometimes that I like going out and I'm in the mood to go out but there are some other times that I just want to sit and watch Netflix <\S11>	✓	✓	×
4. Textual: Introducing example or elaboration	It introduces an example or elaboration to what was previously said (present data).	<T1> [...] you know giving rules it could have the result of you not doing something.. **sort of** you not coming back home late.. but it's not because you believe you know that it's bad to stay out all night [...] <\T1>	×	✓	×

Function	Description	Example	Use by learners	Use by teachers	Presence in material
5. Interpersonal: Hedging and positive politeness	It is used when "speakers dramatize their emotions or express strong opinions [...] [it] softens a strongly voiced opinion or the exaggerated impression of affect" (Aijmer, 2002:201). It also marks "the speaker's wish to be reasonable and to soften the effect of the speech act (Holmes, 1988a:100)" (Aijmer 2002:201).	<S13> [...] in the first picture there are some adults who are playing a video game.. I think this is **kind of** immature but is my own opinion.. whereas in the second picture [...] <\S13>	✓	✓	×
6. Negative politeness	It appears in requests or complaints. "[S]peakers avoid making bald requests or straightforward complaints; the speaker and hearer have 'face' and they show concern for each other's face needs e.g. by softening an action which may be heard as threatening freedom of action and freedom from imposition (Brown & Levinson 1987) [...] A request or a suggestion may be heard as face- threatening and typically contain a softening 'sort of' (Aijmer, 2002:205).	<T1> you could have written you could have **sort of** taken keep fit and **sort of** changed it into fitness <\T1>	×	✓	×
7. Interpersonal: Downtoning	It makes "the declarative sentence apologetic or less abrupt" (Aijmer, 2002:200).	<R> I want you to tell me if you did anything special last weekend <\R> <S15> you mean at the carnival? <\S15> <R> yeah <\R> <S15> oh I- I am **kind of** an introvert so I am not.. <\S15> <R> oh you don't look like that <\R> <S15> yeah many people have told me that ehm so I'm kind- I'm **kind of** an introvert and I don't like crowded places [...] <\S15>	✓	✓	×

Function	Description	Example	Use by learners	Use by teachers	Presence in material
Canonical: Propositional type-noun usage (Beeching, 2016): the meaning is closer to "type of" rather than modifying the constituent. It can be preceded by an article (a, the) or demonstrative (this, that)		<S37> [...] I don't really like **this kind of** personality [...] <\S37>	✓	✓	✓
Canonical: Answer to a yes/no question. It stands on its own, not modifying a constituent (present data).		<R> okay has this ever happened? <\R> <S10> hmm well yeah but not that serious.. you know like joking around mostly but yeah- it yeah.. **kind of** I would say <\S10>	✓	×	×
Unclear: There is truncation and then the speaker reformulates; therefore, the context is not clear and a function cannot be assigned.		<S26> uhm she is very I can say uhm sociable and she has a sense of humour really good sense of humour and we **kind**- we have uhm grown up together [...] <\S26>	✓	×	×
Unclear: The token appears out of context (e.g. in a word list)			×	×	✓
Unclear: It is not clear whether the marker signals a canonical or pragmatic function.		<S45> um since I'm not very keen on musical instruments nor the music **kind of** industry I think that I would play video games <\S45>	✓	×	×

Table 12. Pragmatic and canonical functions of general extenders (Buysse, 2014; Overstreet, 2014; Aijmer, 2015).

Function	Description	Example	Use by learners	Use by teachers	Presence in material
1. Textual: List completer (adjunctive, i.e. use of "and")	It functions as a "list completer", "suggesting that a longer list of examples could be forged" (Buysse, 2014:226). It can also "follow[...] a single example to signal that other instantiations of the same category should be taken into account as well" (Buysse, 2014:219).	<S26> [...] in order to uhm be beautiful and have uhm a good um picture in order to upload it on some social uhm netgroups like instagram facebook snapchat **and so on** <\S26>	✓	×	✓
2. Textual: Hedging (disjunctive, i.e. use of "or")	It signals uncertainty, speculation, hypothesis or hesitation and can collocate with "maybe", "kind of", "I don't know" (Buysee, 2014). Also, it can have a "downtoning function to soften what is said" (Aijmer, 2015:228).	<S7> eh I think it was from the movie Hunger Games <\S7> <R> yeah <\R> <S7> yeah ehm a woman who's a competition **or something like that** and she had to throw arrows at a body? <\S7>	✓	×	×
3. Textual: Approximate word choice	By using the general extender, the speaker signals their "awareness of the potential inaccuracy of [a] term" (Buysse, 2014:231).	<S16> hmm eh well eh I like very much my village and a certain place is.. how can I explain.. it's my house house and hmm the... it's a place where we eh have eh machines the ... <\S16> <R> is it like a farm? <\R> <S16> eh no it's... the tools yeah **things like this** and I like going there eh I think it's quiet [...] <\S16>	✓	×	×
4. Interpersonal: Set marking and shared knowledge (adjunctive)	It plays a "double role to indicate that "there is more" (Overstreet 2005: 1851) as well as to build rapport with the interlocutor by establishing common ground" (Buysse, 2014:220)	<S15> [...] he was actually he actually had no idea where he was and eh eh and he just took a picture or showing something like.. he wanted to show that he knows where he is **and this stuff** and he posted it [...]<\S15>	✓	✓	✓
5. Interpersonal: Set marking and shared knowledge (disjunctive)	It is the same as function (4) with the difference that whereas "adjunctive forms suggest that a longer list of	<S11> [...] uh well the man at the beginning he saw a woman who he probably he probably had a crush on	✓	✓	✓

Function	Description	Example	Use by learners	Use by teachers	Presence in material
	examples could be forged, disjunctive forms suggest that the element(s) provided could be replaced by another element" (Buysse, 2014:226).	**or something** and uh throughout the video we saw the dog doing random things for his owner [...] <\S11>			
6. Interpersonal: Intensification (adjunctive)	It combines function (4) "with intensification and exaggeration" because it includes words like "all", "everything" (Aijmer, 2015:229).	<R> what do you think about that? <\R> <S3> well I think this is not correct because you don't ehm the personality you have won't eh won't change with the likes **and all this stuff** <\S3>	✓	×	✓
7. Textual-interpersonal: End of turn	Unlike in the previous functions, here it occurs without the "and" or "or". It signifies the completion of the response and the end of turn. It could also signal set-marking but is seems that the main function is to bring the turn to an end, signalling to the hearer that the task of responding is completed, and the latter can now take the floor (present data).	<R> [...] do you like going out or staying at home? <\R> <S13> well it depends on the day.. sometimes I have a good mood and I want to chat with my friends so I go out but eh sometimes I prefer to stay at home and maybe eh read some books or watch a movie.. **something like this** <\S13>	✓	✓	×
Canonical: Complement of a verb clause or following a proposition.		<S8> [...] I don't think in my school that this happen. It's- no the- we don't have **something like this** <\S8>	✓	✓	×

C4. DM tokens with one, two, or ambiguous functions.

Table 13. Number of tokens with one pragmatic/discursive function, merged functions and ambiguous function in the discourse of student-participants (N=52), teacher-participants (N=4) and in instructional material for each marker and in total.

Discursive/pragmatic function		**N of tokens**										**Total**
		so	***well***	***just***	***like***	***I don't know***	***actually/ in fact***	***you know***	***I mean***	***kind of/ sort of***	**General extenders**	
One	Students	359	223	108	69	62	51	53	29	35	68	1,057
	Teachers	745	45	170	0	14	29	153	136	127	23	1,442
	Material	441	226	160	10	2	83	49	43	12	54	1,080
Merged	Students	24	104	0	0	0	0	0	0	0	13	141
	Teachers	0	0	0	0	0	0	0	0	0	8	8
	Material	0	70	0	0	0	0	0	0	0	1	71
Ambiguous	Students	0	0	0	8	0	0	0	0	0	0	8
	Teachers	0	0	0	0	0	0	0	0	0	0	0
	Material	0	0	0	0	0	0	0	0	0	0	0
Total	Students	**383**	**327**	**108**	**77**	**62**	**51**	**53**	**29**	**35**	**81**	**1,206**
	Teachers	**745**	**45**	**170**	**0**	**14**	**29**	**153**	**136**	**127**	**31**	**1,450**
	Material	**441**	**296**	**160**	**10**	**2**	**83**	**49**	**43**	**12**	**55**	**1,151**

C5. DM tokens with textual, interpersonal and textual-interpersonal functions.

Table 14. Number and percentage of tokens with (a) textual, (b) interpersonal and (c) textual-interpersonal function in the discourse of student-participants (N=52), teacher-participants (N=4), in instructional material for each marker and in total.

Discursive/pragmatic function		**N (%) of tokens**										**Total**
		so	***well***	***just***	***like***	***I don't know***	***actually/ in fact***	***you know***	***I mean***	***kind of/ sort of***	**General extenders**	
Textual	Students	245 (64.0)	287 (87.8)	9 (8.3)	77 (100.0)	20 (32.3)	35 (68.6)	10 (18.9)	29 (100.0)	20 (57.1)	18 (22.2)	750 (62.2)
	Teachers	232 (31.1)	24 (53.3)	0	0	8 (57.1)	25 (86.2)	27 (17.6)	136 (100.0)	80 (63.0)	0	532 (36.7)
	Material	307 (69.6)	186 (62.8)	0	10 (100.0)	0	67 (80.7)	1 (2.0)	43 (100.0)	10 (83.3)	1 (1.8)	625 (54.3)
Interpersonal	Students	116 (30.3)	4 (1.2)	99 (91.7)	0	8 (12.9)	16 (31.4)	13 (24.5)	0	15 (42.9)	47 (58.0)	318 (26.4)
	Teachers	512 (68.7)	21 (46.7)	170 (100.0)	0	2 (14.3)	4 (13.8)	2 (1.3)	0	47 (37.0)	19 (61.3)	777 (53.6)
	Material	134 (30.4)	40 (13.5)	160 (100.0)	0	2 (100.0)	16 (19.3)	0	0	2 (16.7)	53 (96.4)	407 (35.4)
Textual-interpersonal	Students	22 (5.7)	36 (11.0)	0	0	34 (54.8)	0	30 (56.6)	0	0	16 (19.8)	138 (11.4)
	Teachers	1 (0.1)	0	0	0	4 (28.6)	0	124 (81.0)	0	0	12 (38.7)	141 (9.7)
	Material	0	70 (23.6)	0	0	0	0	48 (98.0)	0	0	1 (1.8)	119 (10.3)
Total	Students	**383**	**327**	**108**	**77**	**62**	**51**	**53**	**29**	**35**	**81**	**1,206** (100.0)
	Teachers	**745**	**45**	**170**	**0**	**14**	**29**	**153**	**136**	**127**	**31**	**1,450** (100.0)
	Material	**441**	**296**	**160**	**10**	**2**	**83**	**49**	**43**	**12**	**55**	**1,151** (100.0)

Appendix D. Coding of data on motivation

Table 15. SDT categories and examples from the present dataset.

SDT Category		Questions and Example statements
Amotivation		R: What is English for you? (Time 1) S9: "*Since I was little, **I haven't liked English as a language** because **I consider it something usual**, **everybody speaks it**, okay I'll get the 'lower'* [certificate]*, I'll get the 'proficiency'* [certificate]*, and okay I might go abroad and speak but that only to be able to communicate. **I like speaking languages that** okay most people speak them but that **are more interesting**, for example now I'm trying to learn Korean on my own*".
Extrinsic general		R: What is English for you? (Time 1) S20: "*It's something that helps **you** for example, if **you** go to a country, **you** are able to communicate with people there, so it's easier, it's not difficult to communicate*".
Extrinsic external motivation	Extrinsic external	R: What is English for you? (Time 1) S12: "*For me it's something that **I will need later in life** or if I go to study in a foreign country, **this foreign language is everywhere** so I think **it's necessary to know it** compared to the other subjects*".
	Extrinsic introjected	R: What's the most important goal you would like to achieve? (Time 3) S35: "*I would like to fix my accent. Because when **I meet someone** and I'll try to speak English in a serious way, **they will understand** that I haven't been speaking English since I was born and **it's going to make me feel awkward**".*
Extrinsic internal motivation	Extrinsic identified	R: What is English for you? (Time 1) S37: "*For me, English is the most basic language that I've ever liked to learn and speak. **Because I want to study abroad,** I've given it a lot of focus- not that I'm studying too much **but because I want to** and a goal that **I really want** to achieve is get the proficiency, and generally I use English in my everyday life **because it's a basic part of my life and I can't imagine my life without it** so **it's very important for me**".*
	Extrinsic integrated	R: What is English for you? (Time 1) S10: *"It's a better way **to express myself**, I feel that, somehow, **I express myself better than in Greek** and that's why I find it more convenient to speak in English. For example, when I'm alone at home, I speak in English on my own*".
Intrinsic motivation	Knowledge	R: Why do you have contact with English in your free time? (Time 2) S15: "*Because I like it. Generally, **I really like** languages, I believe that when you know languages, at the same time that you're learning the language, **you learn about a different culture, different mindsets, different ways of life,** and **I really like learning about other places**, I wanted to travel from a young age and travel to many*

SDT Category		Questions and Example statements
		places, and what I do now is like travelling mentally and it's something that I really like because it is one of my dreams".
	Accomplishment	R: Why do you have contact with English in your free time? (Time 2) S18: "*I like that **I have the ability to understand**, not exactly, but from the context, and **this urges me to learn English** and generally **it's something that I can use** besides Greek".*
	Stimulation	R: Why do you have contact with English in your free time? (Time 2) S48: "*I prefer doing everything in English. Even if there is the option to use Greek, **I prefer to use English because I enjoy it more**".*
	Linguistic stimulation	R: How do you feel about speaking in English at the moment? (Time 3) S4: *"I can say that **I like English more as a language** and **I like to pronounce it because it has different idioms[46] from place to place** and **the accent sounds better**. But because English, as we know, is a mixture of many languages together. And so, a language arises that has accents from Germany, Norway and France and I think it wouldn't be the best thing to communicate with others because I don't have the best accent but okay **I like it**... it's, how can say it, **it's beautiful**".*
	Superiority	R: How do you feel about speaking in English at the moment? (Time 3) S37: "***I like that not everyone can understand me**, for example my sister who is younger and doesn't know it. And I really like the accent which isn't like Greek and **I feel that I can speak better than other people here, so I feel I have an advantage over others**".*

Note. Emphasis is added by the researcher and indicates cues which assisted in the coding process.

[46] The participant possibly meant "dialects".

Table 16. Coding examples of self-discrepancy.

Present-future self-discrepancy	Statements indicating a Current L2 Self	Statements indicating a Future L2 Self
Match	S1: "*English plays a very important role in my life, so I don't see it as a subject but as a second basic language because in the summer my father deals with hotels and tourism so I always speak in English or meet people and generally I really like it so I'm using it whenever I can*".	S1: *"I'd like to reach a point where I can speak very well and make myself sound as if English is my mother tongue".*
Mismatch	S9: "*I don't like English that much. I'm bored of it*".	S9: "*First of all, I want to get the 'lower'* [certificate] *because my parents really bother me and annoy me about it"*.
Neither match nor mismatch	S20: "*I try to practise because I really like to be able to understand the English movies I like and my favourite songs".*	S20: "[The most important goal is] *to get my certificate".*

Appendix E. Assessment of data normality for quantitative analysis

Table 17. Normality tests for learners' DM use (extreme outlier excluded, N = 51).

Variables	Kolmogorov – Smirnov Statistic									
	Time 1		Time 2		Time 3		Time 4		Average across T1-T4	
	Statistic (df)	Sig.	Statistic (df)	Sig.	Statistic (df)	Sig.	Statistic (df)	Sig.	Statistic (df)	Sig.
DM range	.152 (51)	.005	.175 (51)	.000	.171 (51)	.001	.193 (51)	.000	.146 (51)	.008
Overall DM frequency	.110 (51)	**.177**	.099 (51)	**.200**	.113 (51)	**.130**	.147 (51)	.008	.098 (51)	**.200**
Textual markers	.185 (51)	.000	.139 (51)	.015	.143 (51)	.011	.157 (51)	.003	.112 (51)	**.139**
Interpersonal markers	.172 (51)	.001	.272 (51)	.000	.231 (51)	.000	.286 (51)	.000	.162 (51)	.002
Textual-interpersonal markers	.395 (51)	.000	.331 (51)	.000	.402 (51)	.000	.318 (51)	.000	.171 (51)	.001

Note. T1-T4 = Time 1 through Time 4; df=degrees of freedom; Sig.=significant; significant values, i.e. <.05, indicate violation of normality; non-significant values indicate normal distribution and are presented in bold.

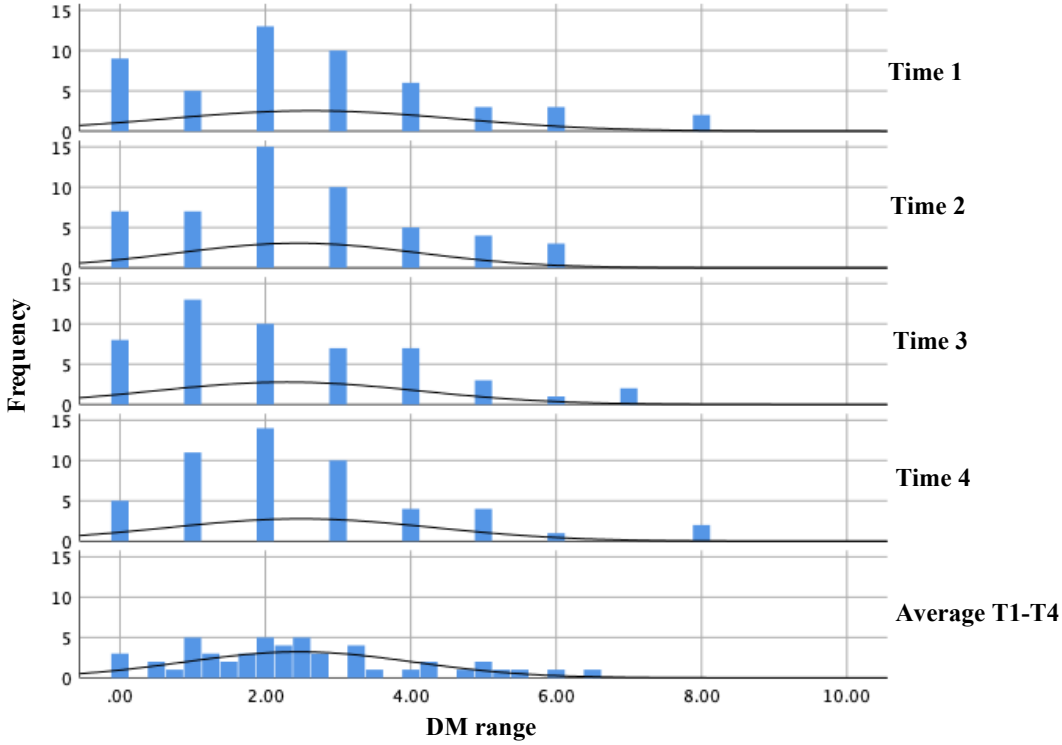

Figure 1. Histograms of DM range at Times 1, 2, 3, 4 and Average T1-T4 (N=51).

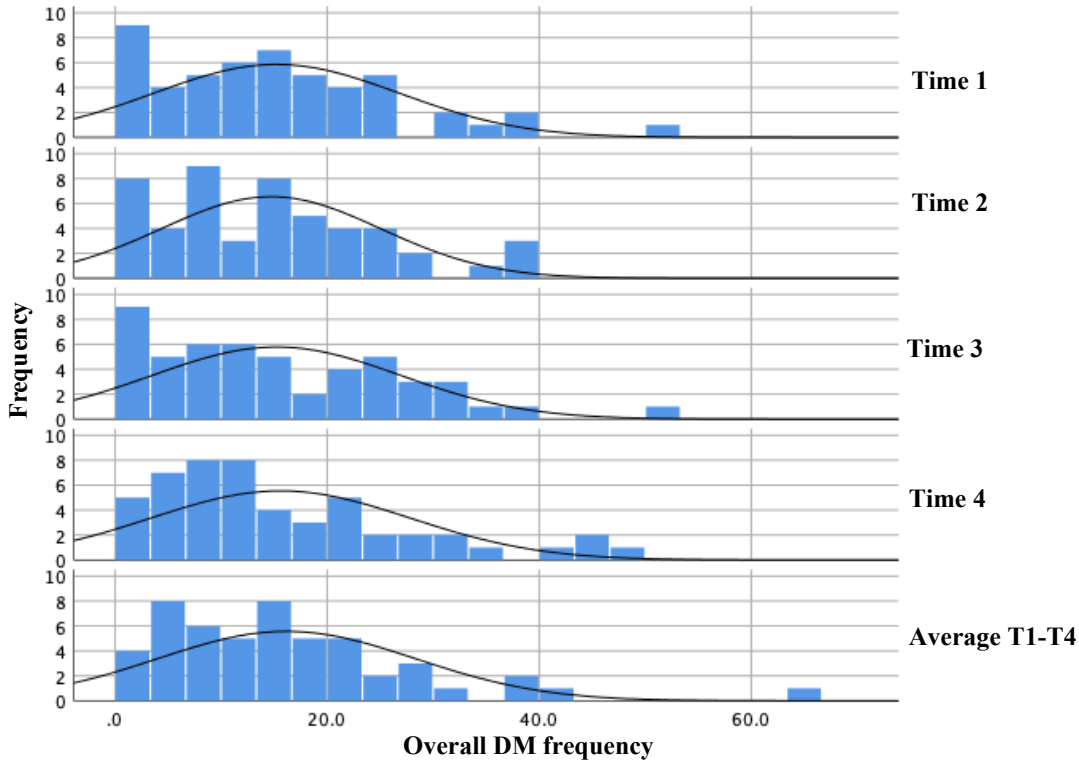

Figure 2. Histograms of overall DM frequency at Times 1, 2, 3, 4 and Average T1-T4 (N=51).

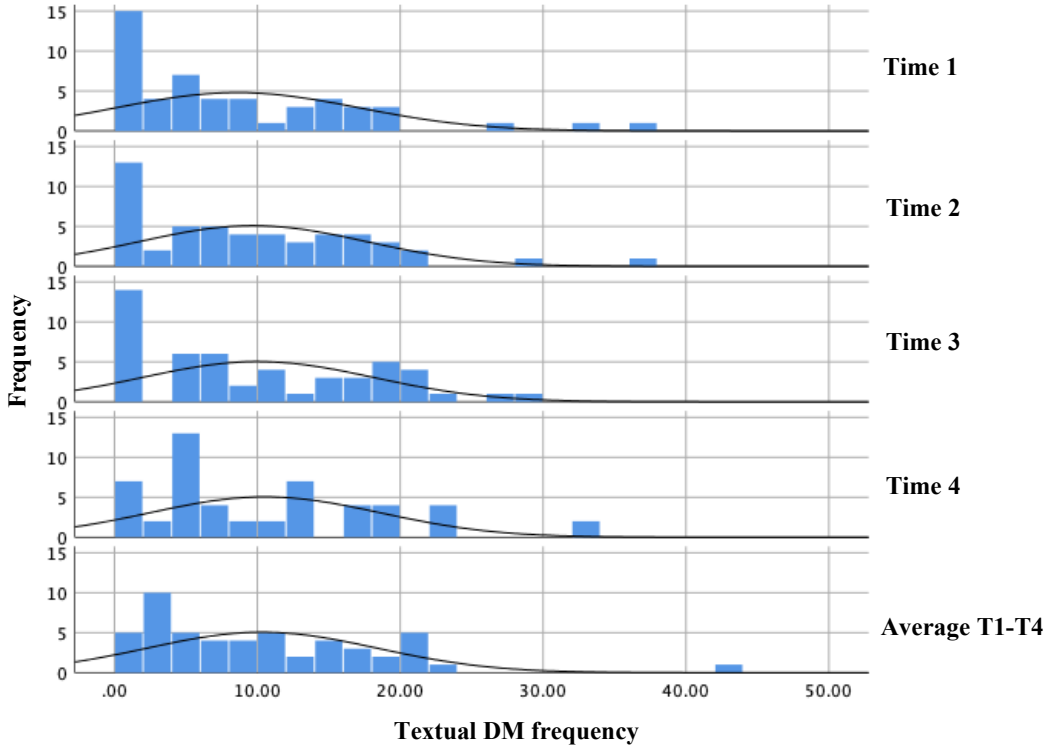

Figure 3. Histograms of textual DM frequency at Times 1, 2, 3, 4 and Average T1-T4 (N=51).

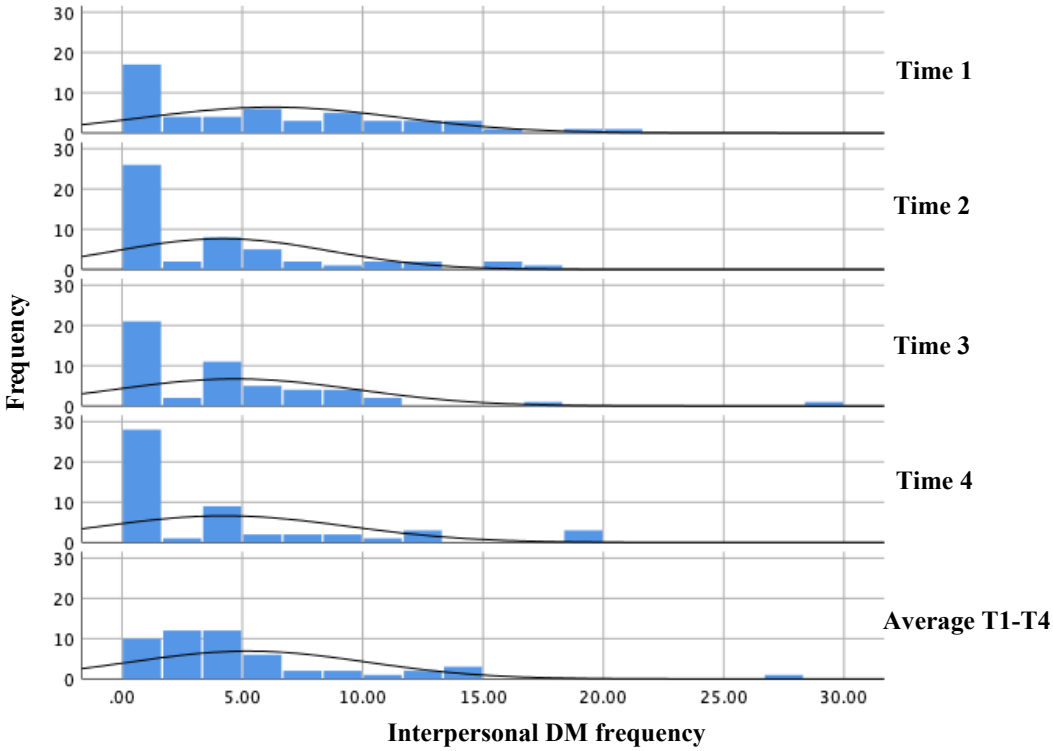

Figure 4. Histograms of interpersonal DM frequency at Times 1, 2, 3, 4 and Average T1-T4 (N=51).

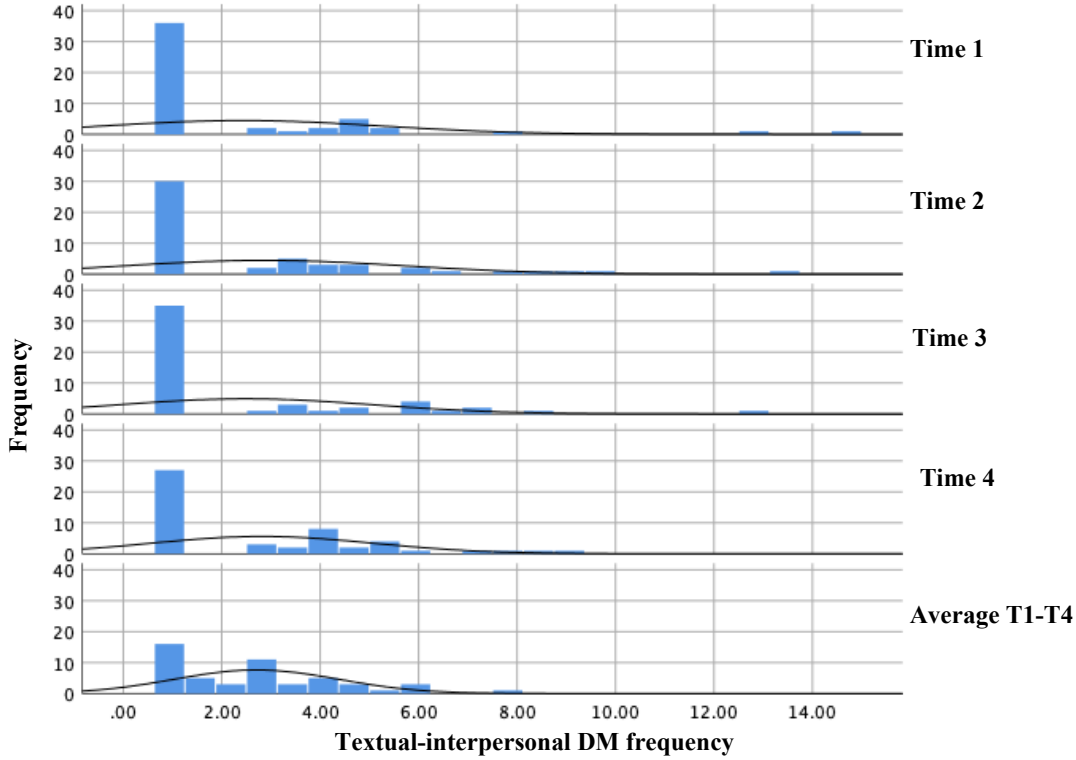

Figure 5. Histograms of textual-interpersonal DM frequency at Times 1, 2, 3, 4 and Average T1-T4 (N=51).

Appendix F. Additional analysis

Table 17. Use of the 10 DM types under examination at each time-point.

DM	Time T / ‰ / N (%)											
	Time 1			Time 2			Time 3			Time 4		
	T	‰	N (%)	T	‰	N (%)	T	‰	N (%)	T	‰	N (%)
so	81	4.17	33 (64.7)	88	4.36	35 (68.6)	114	5.62	36 (70.6)	89	5.12	40 (78.4)
well	50	2.43	17 (33.3)	83	4.25	28 (54.9)	69	3.5	20 (39.2)	81	4.72	28 (54.9)
just	37	1.83	19 (37.3)	22	1.07	8 (15.7)	21	0.87	9 (17.6)	27	1.27	11 (21.6)
like	35	1.54	11 (21.6)	15	0.66	8 (15.7)	13	0.57	6 (11.8)	14	0.67	7 (13.7)
I don't know	12	0.6	10 (19.6)	15	0.72	12 (23.5)	19	1.09	10 (19.6)	13	0.69	13 (25.5)
actually/ in fact	23	1.25	14 (27.5)	11	0.67	9 (17.6)	8	0.41	7 (13.7)	8	0.47	5 (9.8)
you know	5	0.19	3 (5.9)	12	0.47	4 (7.8)	12	0.5	4 (7.8)	8	0.35	5 (9.8)
I mean	10	0.47	4 (7.8)	3	0.12	2 (3.9)	9	0.4	6 (11.8)	4	0.2	3 (5.9)
sort of/ kind of	7	0.3	6 (11.8)	11	0.43	7 (13.7)	7	0.28	5 (9.8)	7	0.34	5 (9.8)

DM	Time T / ‰ / N (%)											
	Time 1			Time 2			Time 3			Time 4		
	T	‰	N (%)	T	‰	N (%)	T	‰	N (%)	T	‰	N (%)
General extenders	26	1.5	17 (33.3)	17	0.9	12 (23.5)	21	1.04	14 (27.5)	12	0	10 (19.6)
Total	286		42 (82.3)	277		44 (86.2)	293		43 (84.3)	263		46 (90.1)

Note. **T**-raw number of tokens in the transcriptions (i.e. absolute frequency); **‰**- mean relative number of tokens per 1,000 words of student speech (i.e. mean relative frequency); **N (%)**- number and percentage of students who used the marker.

Table 18. Total number of pages of instructional material with DM content and by class level.

School (class level)		**n of pages with DM content/ total n of pages (% of coverage)**			
		Transcripts of audio material in textbooks	**Sections for speaking practice in textbooks**	**Extra material**	**Total**
School A	Lower	22/22 (100%)	1/16 (6.3%)	2/2 (100%)	25/40 (62.5%)
	Higher	18/18 (100%)	7/13 (53.8%)	0	25/31 (80.6%)
School B	Lower	19/19 (100%)	6/25 (24.0%)	23/23 (100%)	48/67 (71.6%)
	Higher	16/16 (100%)	6/17 (35.3%)	0	22/33 (66.6%)
School C	Lower	12/20 (100%)	7/13 (53.8%)	0	19/33 (57.6%)
School D	Higher	18/18 (100%)	7/13 (53.8%)	0	25/31 (80.6%)

Table 19. Random-intercept GLMMs with time as fixed effect and aspects of DM use as dependent variables.

Model	Parameters		β	SE	Test	p	95% CI
DM range	Fixed	Intercept	.73	.13	t = 5.48	<.001	[.47, .99]
		Time (linear)	–.01	.03	t = –.37	.711	[–.06, .04]
	Random	Residual					
		Time 1	.85	.19	Z = 4.40	<.001	[.55, 1.33]
		Time 2	.40	.11	Z = 3.75	<.001	[.24, .67]
		Time 3	.55	.14	Z = 4.09	<.001	[.34, .89]
		Time 4	.28	.09	Z = 3.19	.001	[.15, .52]
		Intercept (participant)	.53	.14	Z = 3.80	<.001	[.32, .89]
	AICC		422.90				
Overall DM frequency	Fixed	Intercept	2.46	.15	t = 16.35	<.001	[2.16, 2.76]
		Time (linear)	–.01	.03	t = –.37	.712	[–.07, .05]
	Random	Residual					
		Time 1	.35	.08	Z = 4.18	<.001	[.22, .56]
		Time 2	.19	.05	Z = 3.51	<.001	[.11, .33]
		Time 3	.23	.06	Z = 3.83	<.001	[.14, .39]
		Time 4	.19	.05	Z = 3.49	<.001	[.11, .33]
		Intercept (participant)	.75	.16	Z = 4.64	<.001	[.49, 1.14]
	AICC		430.65				
Textual markers	Fixed	Intercept	1.86	.17	t = 10.80	<.001	[1.52, 2.20]
		Time (linear)	.05	.04	t = 1.10	.271	[–.04, .13]
	Random	Residual					
		Time 1	.84	.19	Z = 4.52	<.001	[.54, 1.29]
		Time 2	.35	.09	Z = 3.78	<.001	[.21, .59]
		Time 3	.32	.09	Z = 3.67	<.001	[.19, .54]
		Time 4	.24	.07	Z = 3.23	.001	[.13, .44]
		Intercept (participant)	.70	.16	Z = 4.40	<.001	[.45, 1.10]
	AICC		511.91				
Interpersonal markers	Fixed	Intercept	1.42	.19	t = 7.47	<.001	[1.05, 1.80]
		Time (linear)	–.08	.06	t = –1.25	.213	[–.20, .04]
	Random	Residual					
		Time 1	1.40	.32	Z = 4.34	<.001	[.89, 2.21]
		Time 2	.36	.11	Z = 3.17	.002	[.19, .66]
		Time 3	.44	.12	Z = 3.70	<.001	[.26, .75]
		Time 4	.90	.21	Z = 4.37	<.001	[.57, 1.41]
		Intercept (participant)	.49	.13	Z = 3.74	<.001	[.29, .82]
	AICC		585.82				
Textual-interpersonal markers	Fixed	Intercept	.68	.15	t = 4.68	<.001	[.39, .96]
		Time (linear)	.05	.04	t = 1.03	.302	[–.04, .13]
	Random	Residual					
		Time 1	.53	.13	Z = 4.14	<.001	[.33, .85]
		Time 2	.64	.15	Z = 4.30	<.001	[.41, 1.01]
		Time 3	.55	.13	Z = 4.21	<.001	[.35, .88]
		Time 4	.42	.11	Z = 3.91	<.001	[.25, .69]
		Intercept (participant)	.28	.08	Z = 3.36	.001	[.16, .51]
	AICC		523.18				

Note. β=estimate; SE=standard error; CI=confidence interval; AICC=Akaike Information Criterion Corrected.

Table 20. The 23 informal L2 activities of student-participants.

Skill		Activity
Speaking	1.	Speaking to oneself only for leisure
	2.	Speaking to oneself only for homework
	3.	Interacting (by speaking) with L1/L2 others only for leisure
	4.	Interacting (by speaking) with L1/L2 others only for homework
Writing	5.	Chatting online (by writing) to L1/L2 others only for leisure
	6.	Writing on social media (e.g. comments, status updates) only for leisure
Listening/	7.	Listening to songs only for leisure
Watching	8.	Watching videos only for leisure
	9.	Watching videos both for leisure and homework
	10.	Watching TV/films without subtitles/captions only for leisure
	11.	Watching TV/films with subtitles/captions only for leisure
	12.	Playing digital games without subtitles/captions only for leisure
	13.	Playing digital games with subtitles/captions only for leisure
Reading	14.	Reading books only for leisure
	15.	Reading books only for homework
	16.	Reading books both for leisure and homework
	17.	Reading song lyrics only for leisure
	18.	Reading comments/posts on social media only for leisure
	19.	Reading comments/posts on social media both for leisure and homework
	20.	Reading articles online only for leisure
	21.	Reading articles online only for homework
	22.	Reading articles online both for leisure and homework
	23.	Reading in-game instructions/storylines only for leisure

Table 21. Summary results of random intercept GLMMs with engagement in each informal L2 activity and overall engagement as each dependent variable and linear time as fixed effect.

Model		F (df1, df2)	p-value
1.	Speaking to oneself only for leisure	.18 (1, 202)	.669
2.	Speaking to oneself only for homework	2.28 (1, 201)	.133
3.	Interacting (by speaking) with L1/L2 others only for leisure	.95 (1, 201)	.331
4.	Interacting (by speaking) with L1/L2 others only for homework	7.47 (1, 201)	**.007**
5.	Chatting online (by writing) only for leisure	.46 (1, 201)	.500
6.	Writing on social media (e.g. comments, status updates) only for leisure	.07 (1, 201)	.792
7.	Listening to songs with English lyrics only for leisure	1.46 (1, 202)	.220
8.	Watching videos only for leisure	3.27 (1, 202)	.072
9.	Watching videos both for leisure and homework	8.93 (1, 202)	**.003**
10.	Watching TV/films without subtitles only for leisure	.67 (1, 202)	.415
11.	Watching TV/films with subtitles only for leisure	.24 (1, 201)	.624
12.	Playing digital games without subtitles only for leisure	11.60 (1, 202)	**.001**
13.	Playing digital games with subtitles only for leisure	1.83 (1, 202)	.177
14.	Reading books only for leisure	2.81 (1, 201)	.095
15.	Reading books only for homework	.84 (1, 201)	.362
16.	Reading books both for leisure and homework	.07 (1, 201)	.787
17.	Reading song lyrics only for leisure	2.33 (1, 202)	.128
18.	Reading comments/posts on social media only for leisure	4.49 (1, 202)	**.035**
19.	Reading comments/posts on social media both for leisure and homework	.24 (1, 202)	.623
20.	Reading articles online only for leisure	.32 (1, 201)	.570

Model		F (df1, df2)	p-value
21.	Reading articles online only for homework	3.13 (1, 201)	.078
22.	Reading articles online both for leisure and homework	7.13 (1, 201)	**.008**
23.	Reading in-game instructions/storylines only for leisure	.43 (1, 202)	.515
24.	Overall engagement in all activities	.00 (1, 105)	.990

Note. Significant p-values for the effect of time are presented in bold.